

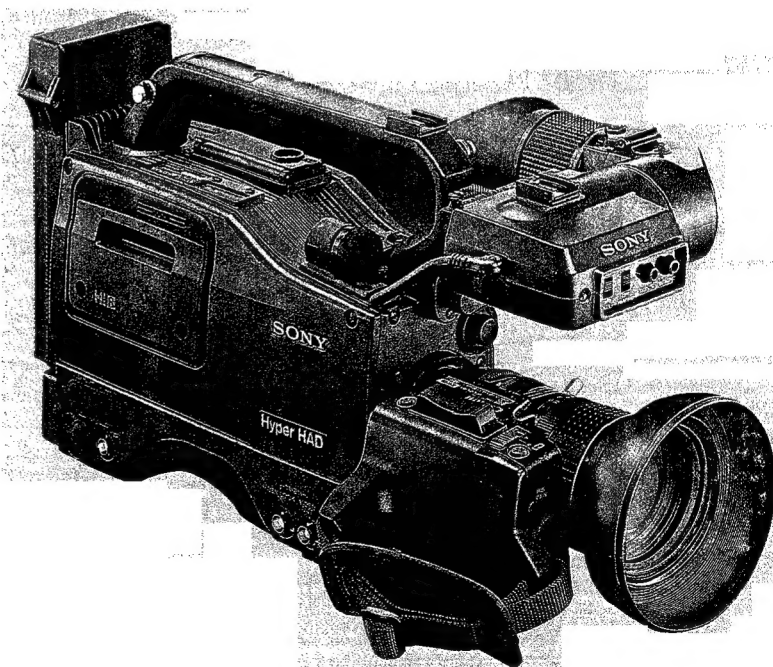
**SONY®**

Hi8 CAMCORDER

# EVW-300


## SERVICE MANUAL

Vol. 1 (1st Edition)



**Hi8**  
**Hyper HAD**

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Components identified by shading and  marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

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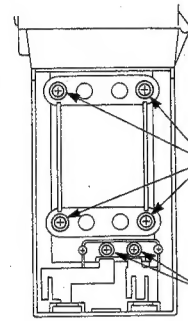


## SECTION 1 SERVICE INFORMATION

### 1-1. CABINET REMOVAL AND INSTALLATION

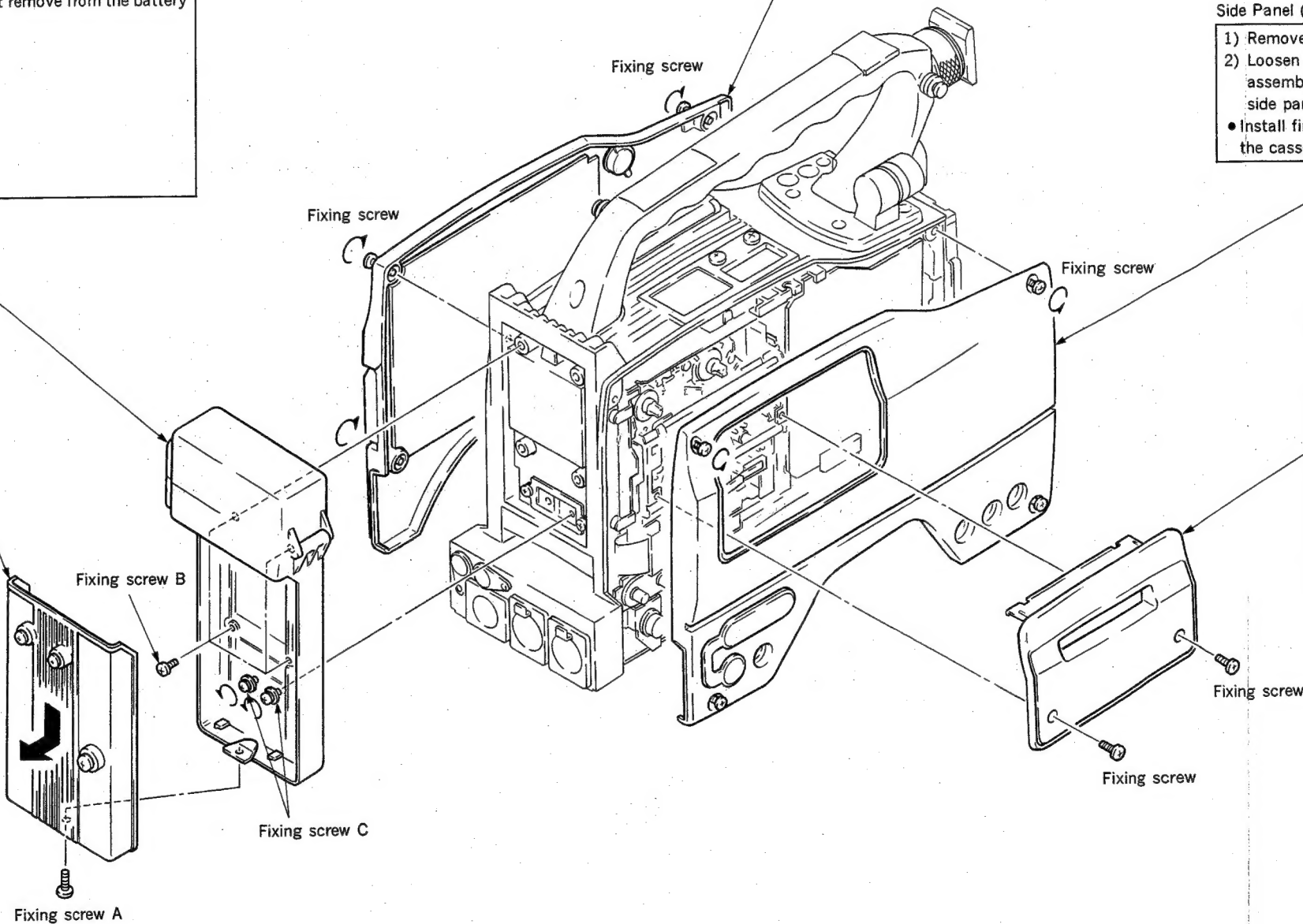
Battery Case

- 1) Remove the fixing screw A and remove the battery case lid in the direction of the arrow.
- 2) Remove the four fixing screws B as shown in the figure.
- 3) Loosen the two fixing screws C and remove the battery case. The fixing screws C cannot remove from the battery case because of stoppers.



Fixing screw B

Fixing screw C



Side Panel (Right) Assembly

- 1) Loosen the four fixing screws and open the side panel (right) assembly. The fixing screws cannot remove from the side panel (right) assembly because of stoppers.
- 2) Disconnect the connector CN2 from the SW-484 board.
- 3) Disconnect the connector CN1 from the SW-485 board.
- 4) Disconnect the connector of the power switch from the harness from frame.
- 5) Disconnect the connectors CN3 and CN4, and the connectors CN1 and CN2 of the flexible card wire from the FP-40/40P Board.
- 6) Remove the fixing screws and two wire holders.

Side Panel (Left) Assembly

- 1) Remove the cassette lid.
- 2) Loosen the four fixing screws and remove side panel (left) assembly. The four fixing screws cannot remove from the side panel (left) assembly because of stoppers.
- Install first the side panel (left) assembly and then install the cassette lid.

Cassette Lid

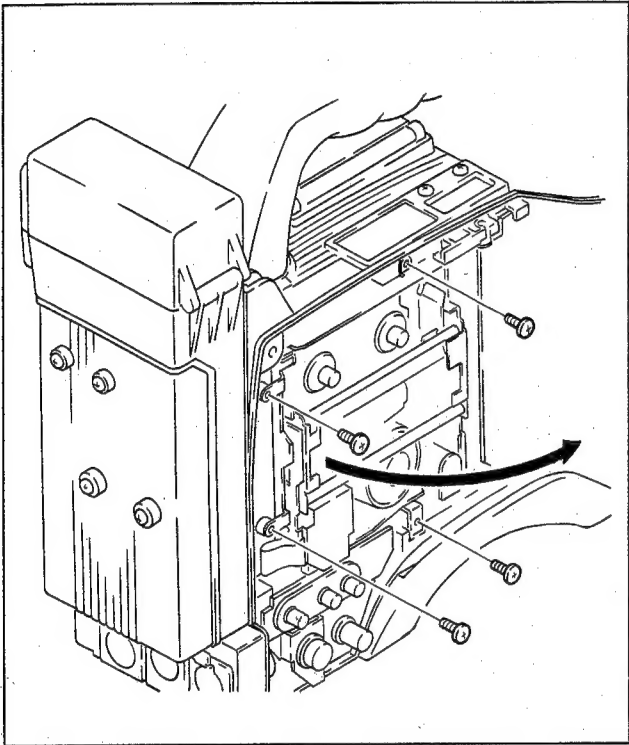
- 1) Turn on the power and press the EJECT button. The cassette lid will be opened.
- 2) Remove the two screws (+B2×8) and remove the cassette lid while pushing it down.
- Install first the side panel (left) assembly and then install the cassette lid.
- Put the two claws of the cassette lid to the holes and install the cassette lid while pushing it up.



1-2. SERVICING OF MECHANICAL DECK BLOCK

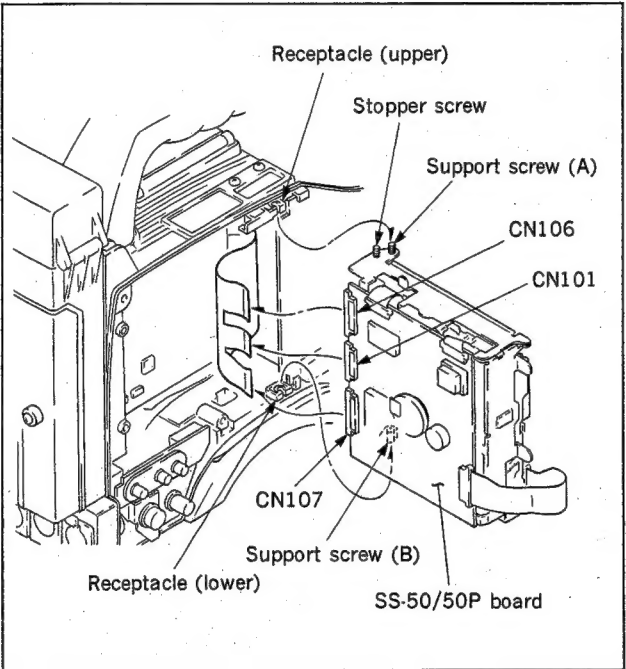
1-2-1. Mechanical Deck Removal

- 1. Remove the side panel (left) according to section 1-1.
- 2. Remove the four fixing screws shown in the figure, then open the mechanical deck in the direction of the arrow.



- 3. Disconnect the connectors CN101, CN106 and CN107 of the flexible card wires from the SS-50/50P Board.
- 4. Raise the mechanical deck, then remove support screw (B) from the receptacle (lower).
- 5. Pull out support screw (A) of the mechanical deck and also the stopper screw, in the downward direction from the receptacle (upper).

**Note:** When removing the mechanical deck, hold the sheet metal part around the mechanical deck to prevent the mechanical deck from being subjected to a load.



1-2-2. Mechanical Deck Extension

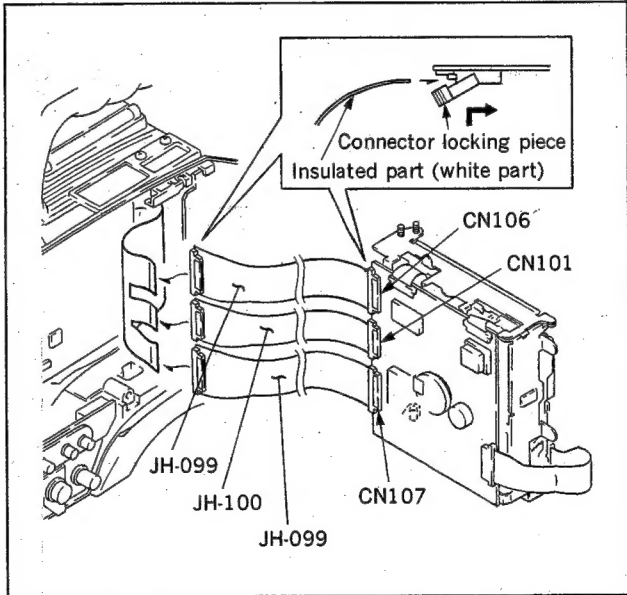
Fixtures: SS Extension Flexible Card Wires  
JH-099 (26P) (J-6360-990-A) two  
JH-100 (14P) (J-6361-000-A) one

- 1. Remove the mechanical deck according to section 1-2-1.
- 2. Insert the extension flexible card wires as shown below, ensuring that they go as far as the base of the mating connectors on the SS-50/50P board, then push down each connector locking piece as shown in Fig.1 until the connector locks.

SS-50/50P board	SS extension flexible card wire
CN106	JH-099
CN101	JH-100
CN107	JH-099

**Note:** When inserting the flexible card wires, ensure that the insulated part (white part) of each flexible wire is on the side nearer you.

- 3. Connect each extension flexible card wire to flexible harness FL-125 on the MB-381/381P board, in sequence from the top.



1-2-3. SS-50/50P Board Extension

Fixtures: SS Extension Flexible Card Wires  
JH-099 (26P) (J-6360-990-A) two  
JH-100 (14P) (J-6361-000-A) one  
JH-101 (13P) (J-6361-010-A) one  
JH-102 (11P) (J-6360-020-A) one

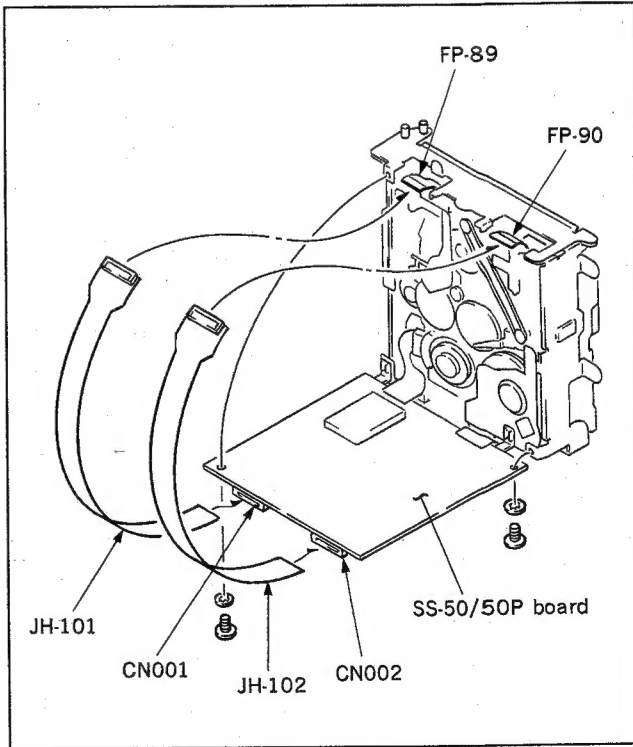
Extend the SS-50/50P board as follows when it is necessary to check the soldering side of the SS-50/50P board or the rear of the mechanical deck.

- 1. Extend the mechanical deck according to section 1-2-2.
- 2. Disconnect the two connectors CN1 and CN2 of the flexible card wire from the SS-50/50P Board.
- 3. Remove the two screws, then open the SS-50/50P board.
- 4. Insert the extension flexible card wires to the base of the mating connectors on the SS-50/50P board, as shown below.

SS-50/50P board	SS extension flexible card wire
CN001	JH-101
CN002	JH-102

**Note:** When inserting the flexible card wires, ensure that the insulated part (white part) of each flexible wire is on the component side.

- 5. Connect the SS extension card wire JH-101 to the connector of the flexible card wire FP-89.
- 6. Connect the SS extension card wire JH-102 to the connector of the flexible card wire FP-90.

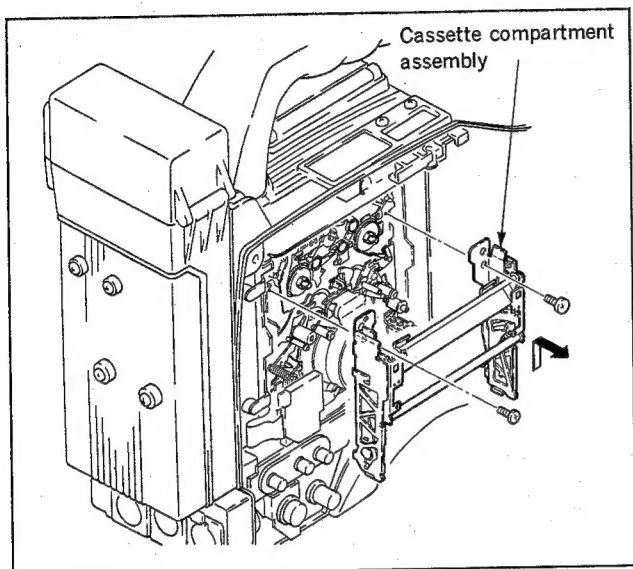




### 1-2-4. Removal and Installation of Cassette Compartment Assembly

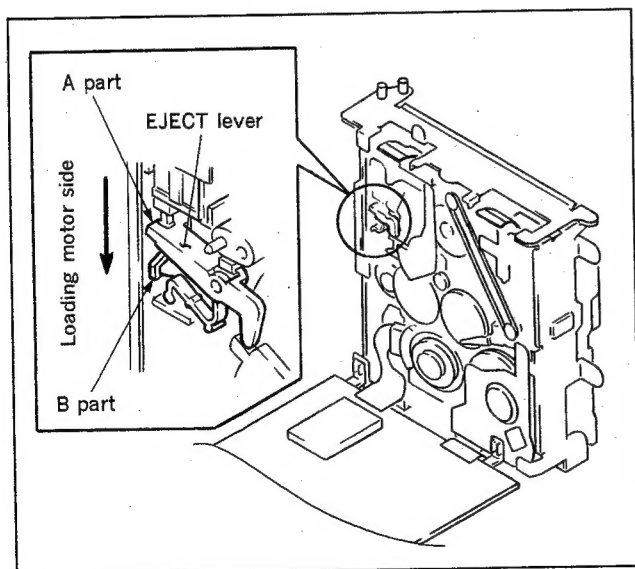
#### Removal

1. Remove the side panel (left) according to section 1-1.
2. Remove the two fixing screws, then remove the cassette compartment assembly in the direction of the arrow.



#### Installation

1. Extend the SS-50/50P board according to section 1-2-3.
2. Turn on the power and set to the threading mode according to Section 1-10.
3. After the threading mode is completed, turn off the power.
4. Put two claws of the cassette compartment to the holes, ensuring that the A part is on the loading motor side of the B part of the EJECT lever, then fix the cassette compartment assembly with the two fixing screws.

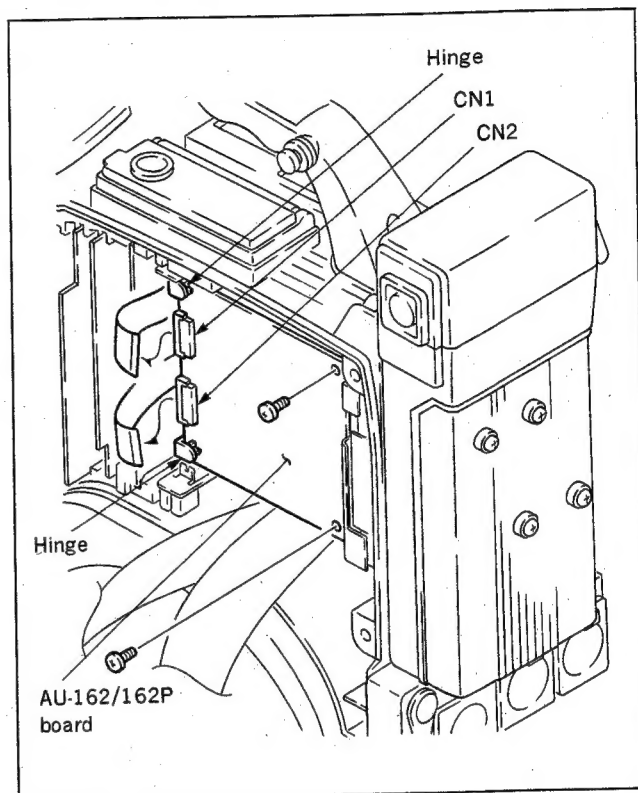


5. Turn on the power and confirm that the cassette compartment rises by pressing the EJECT button.

### 1-3. SERVICING OF PRINTED CIRCUIT BOARDS

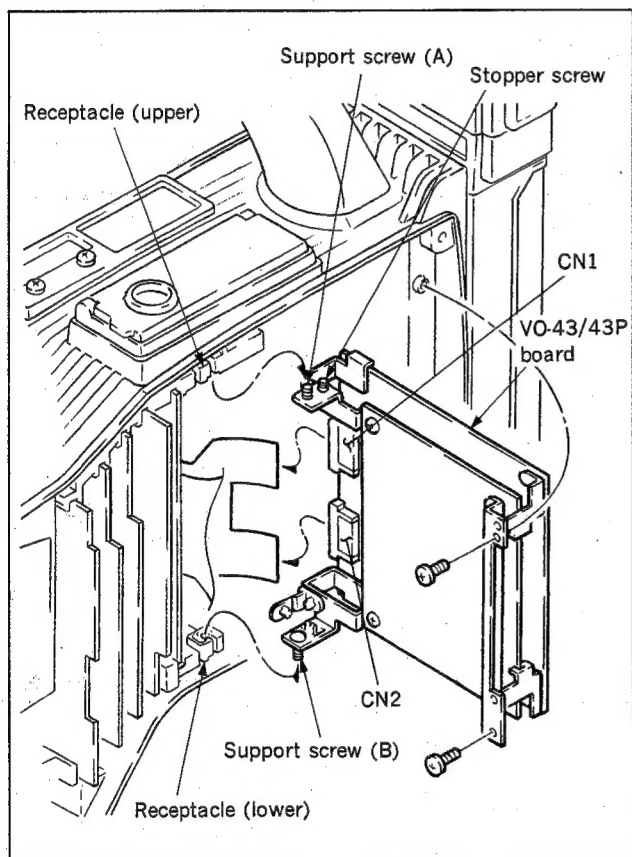
#### 1-3-1. Removal of AU-162/162P Board

1. Loosen the four screws, and open the side panel (right).
2. Disconnect the two connectors CN1 and CN2 of the flexible card wires from the AU-162/162P board.
3. Remove the two screws and two hinges and remove the AU-162/162P Board.



### 1-3-2. Removal of VO-43/43P Board

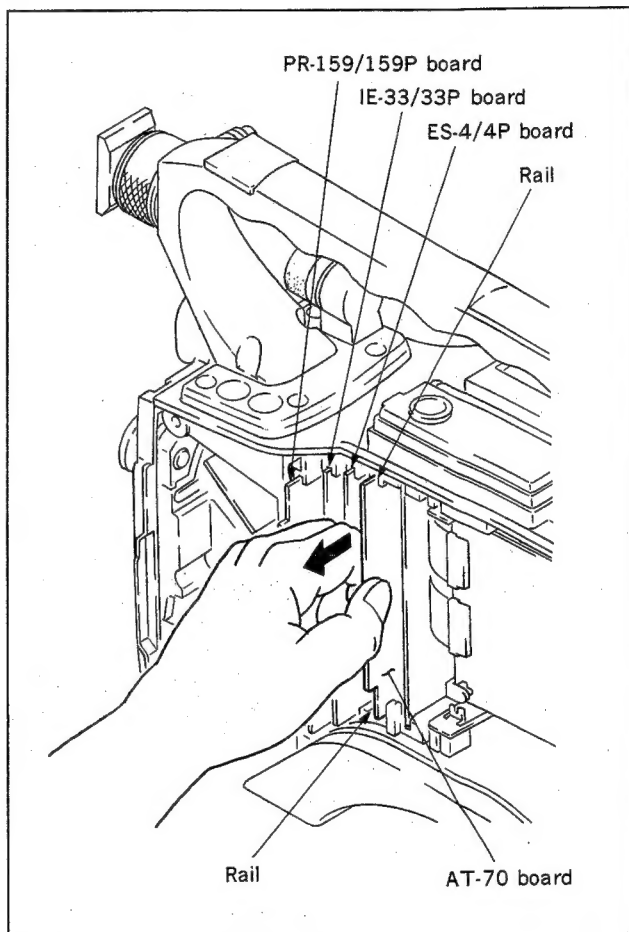
1. Remove the AU-162/162P board according to section 1-4-1.
2. Disconnect the two connectors CN1 and CN2 of the flexible card wires from the VO-43/43P Board.
3. Remove two fixing screws and open the VO-43/43P Board.
4. Raise the VO-43/43P board, then remove support screw (B) from the receptacle (lower).
5. Pull out support screw (A) and the stopper screw of the VO-43/43P board from the receptacle (upper).



### 1-3-3. Removal and Insertion of Board (AT-70, ES-4/4P, IE-33/33P, PR-159/159P Boards)

#### Removal

1. Loosen the four screws, and open the side panel (right).
2. Grasp the board with the fingers, avoiding the components mounted on it, then pull it out while moving it gently up and down.



#### Installation

1. Align the edges of the board with the upper and lower rail grooves, then push in the board as far as it will go.

#### 1-4. MODIFICATION WHEN INSTALLING DXF-50/40A SERIES

It is necessary to carry out the following modification when installing the DXF-50/40A series viewfinder.

Parts to be obtained

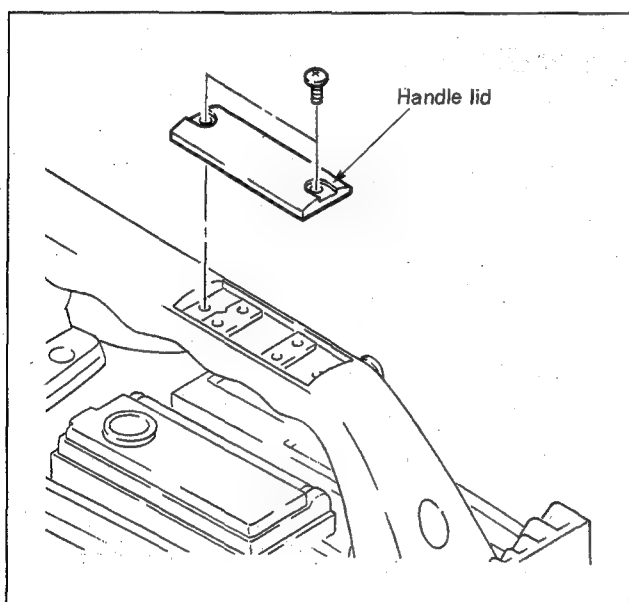
Shoe (3-664-218-11) one

Leaf spring (3-664-228-00) one

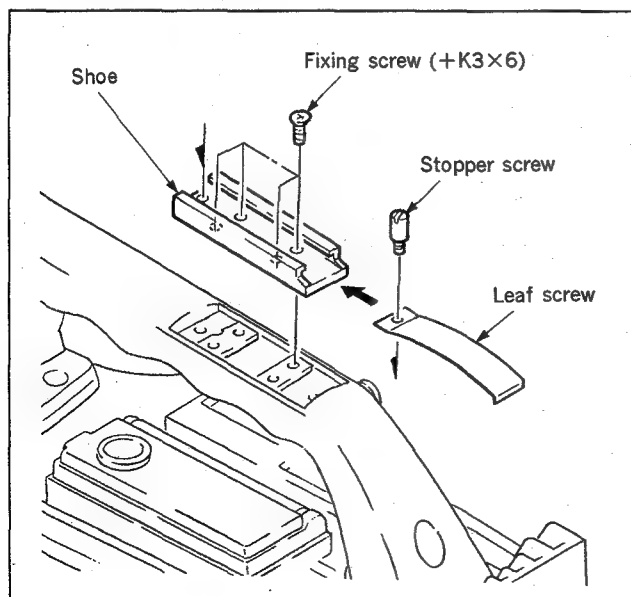
Stopper screw (3-664-213-00) one

Screw +K3×6 (7-682-247-04) four

1. Remove the two screws, then remove the handle lid.



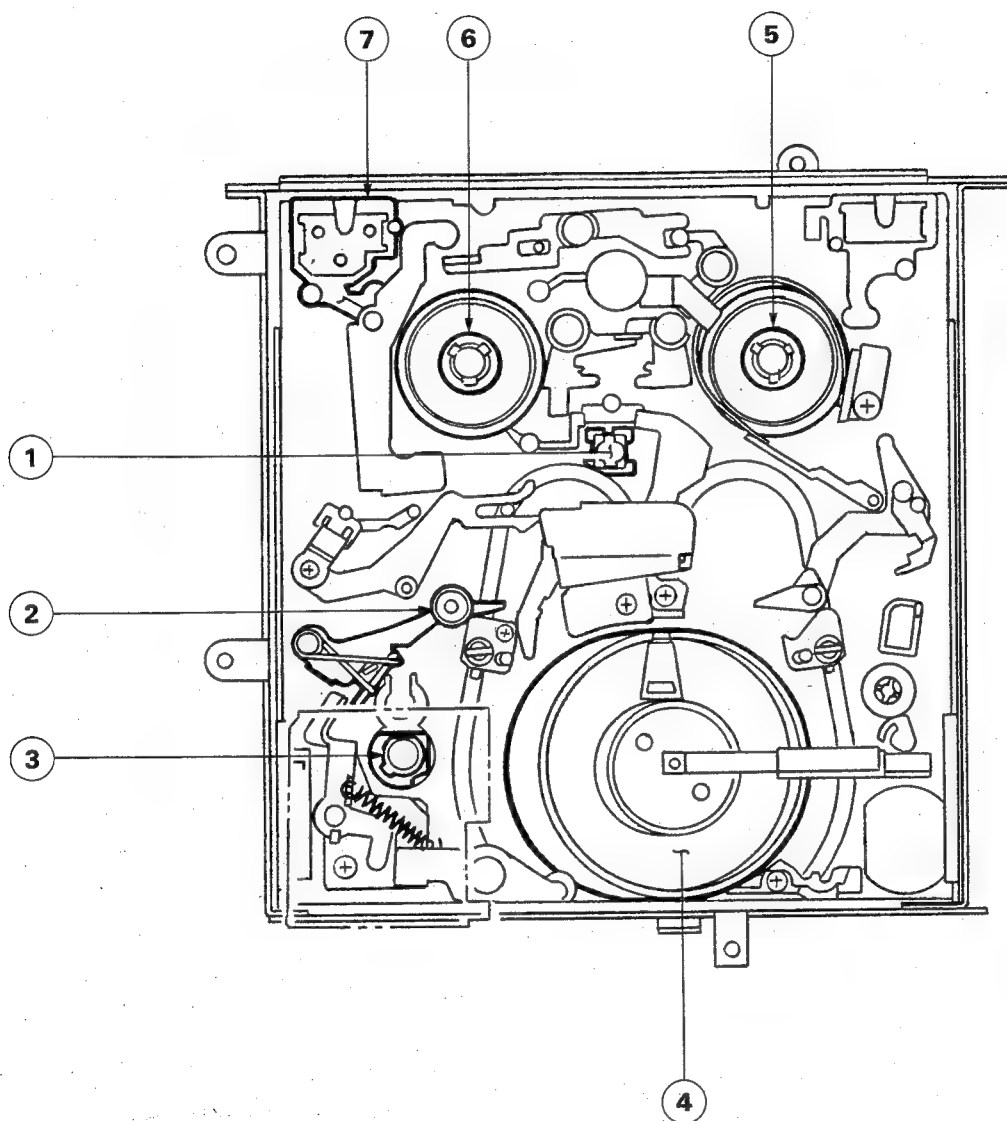
2. Install the shoe using the four screws (+K3×6), then install the leaf spring with the stopper screw.



## 1-5. LOCATION OF MAIN PARTS

### 1-5-1. Location of Main Mechanical Parts/Components

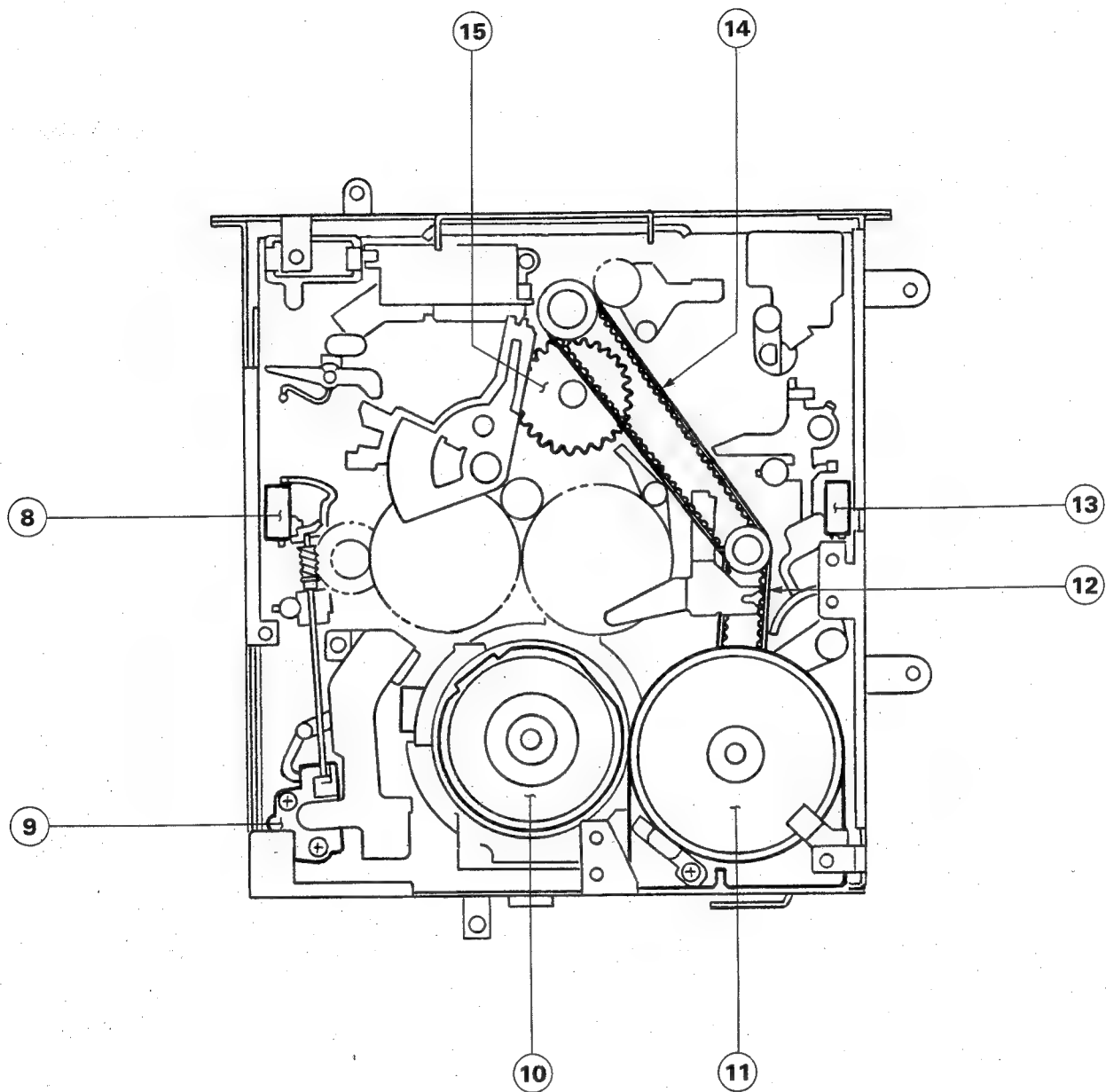
TOP VIEW



- ① Tape Top/End LED
- ② Pinch Roller Assembly
- ③ Capstan Shaft
- ④ Drum Assembly

- ⑤ S Side Reel Table
- ⑥ T Side Reel Table
- ⑦ RECOG. switch

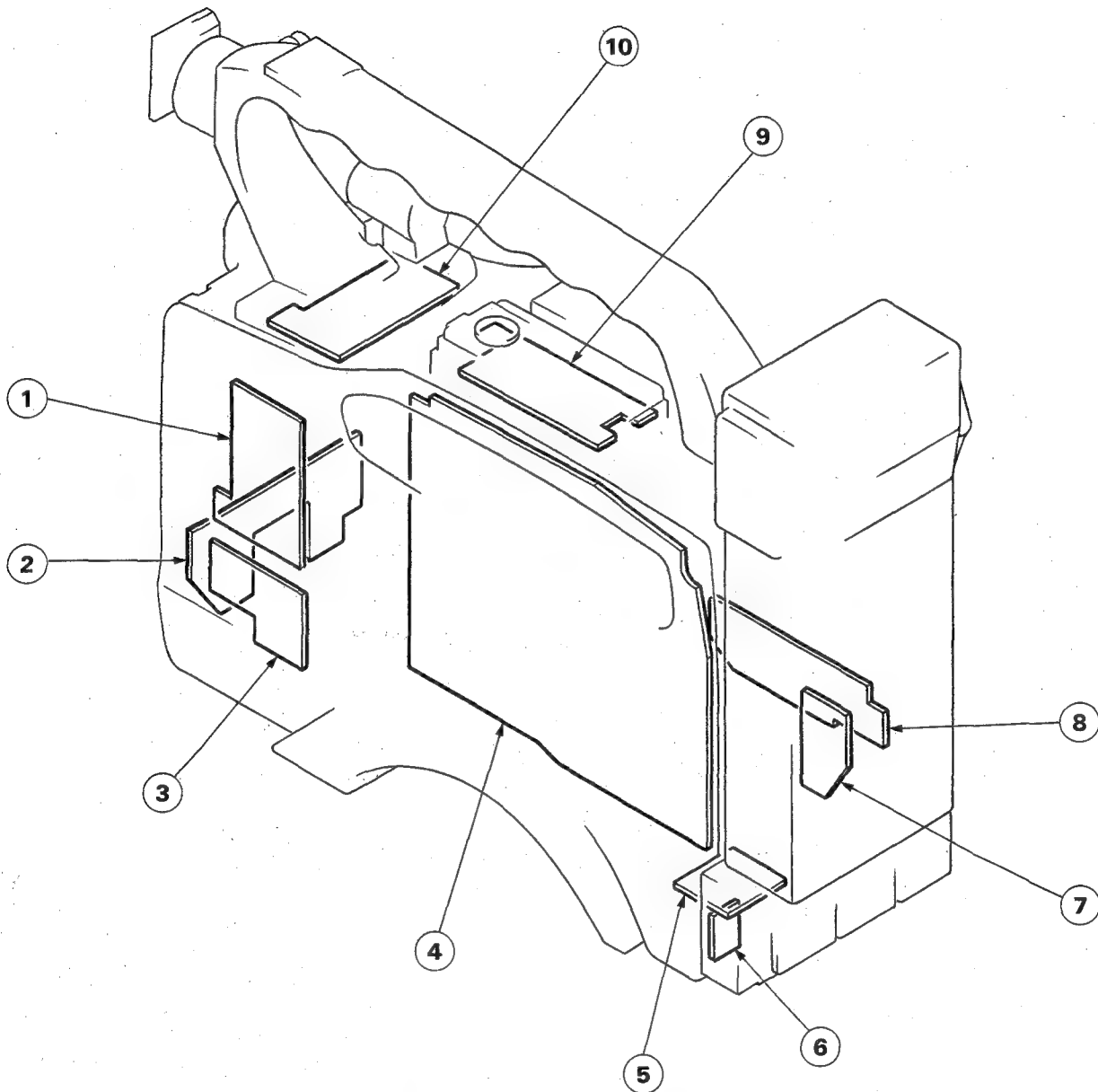
# BOTTOM VIEW



- |                          |                    |
|--------------------------|--------------------|
| ⑧ Tape End Sensor        | ⑫ Timing Belt S    |
| ⑨ Loading Motor Assembly | ⑬ Tape End Sensor  |
| ⑩ Drum Assembly          | ⑭ Timing Belt L    |
| ⑪ Capstan Motor          | ⑮ RK Gear Assembly |

### 1-5-2. Location of Printed Circuit Board

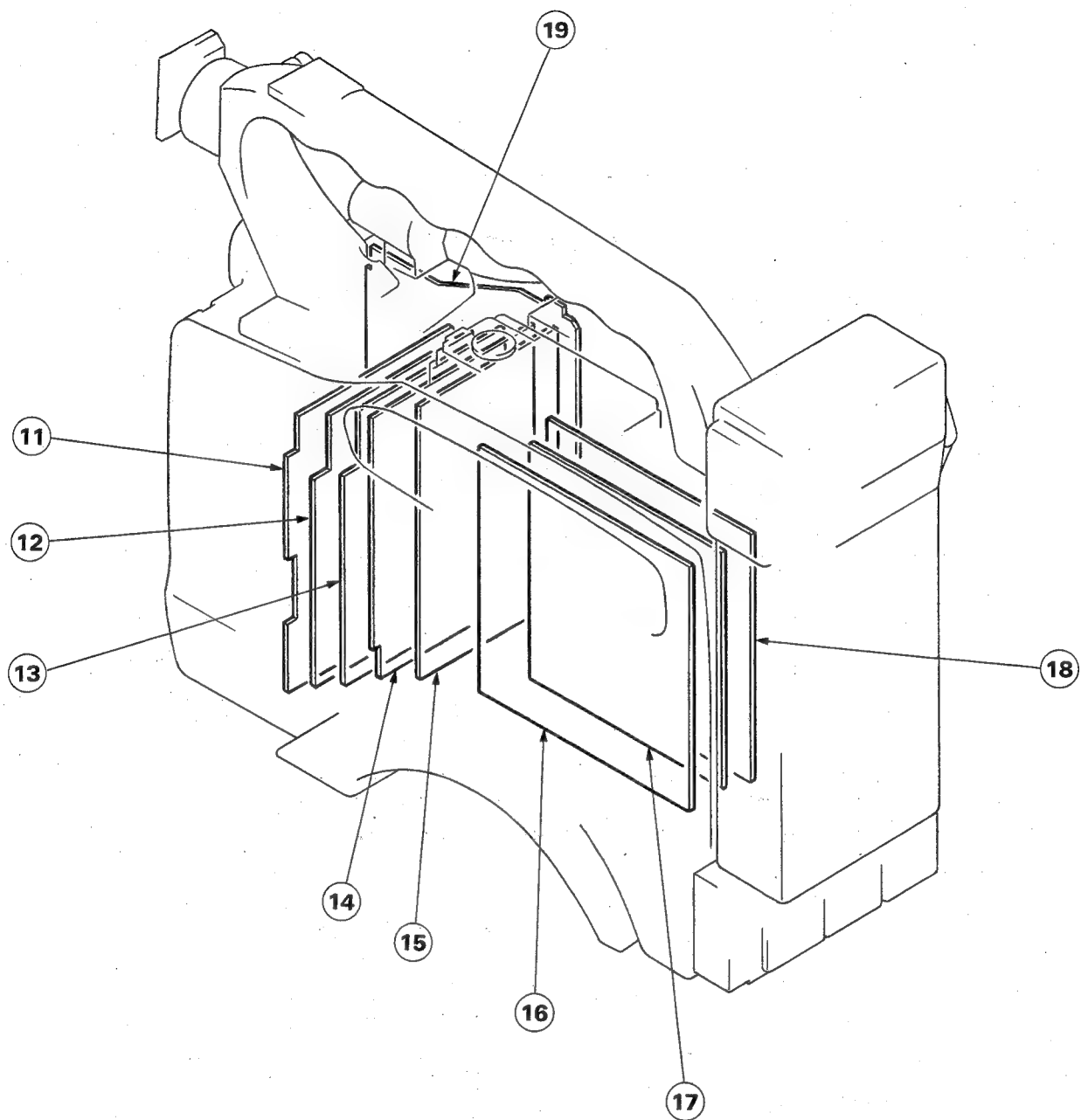
Main part (1)



- ① SW-484 BOARD
- ② SW-506 BOARD
- ③ SW-485 BOARD
- ④ FP-40/40P BOARD
- ⑤ CP-188 BOARD

- ⑥ CP-221 BOARD
- ⑦ CP-189 BOARD
- ⑧ CP-184 BOARD
- ⑨ KY-191 BOARD
- ⑩ SW-507 BOARD

Main part (2)

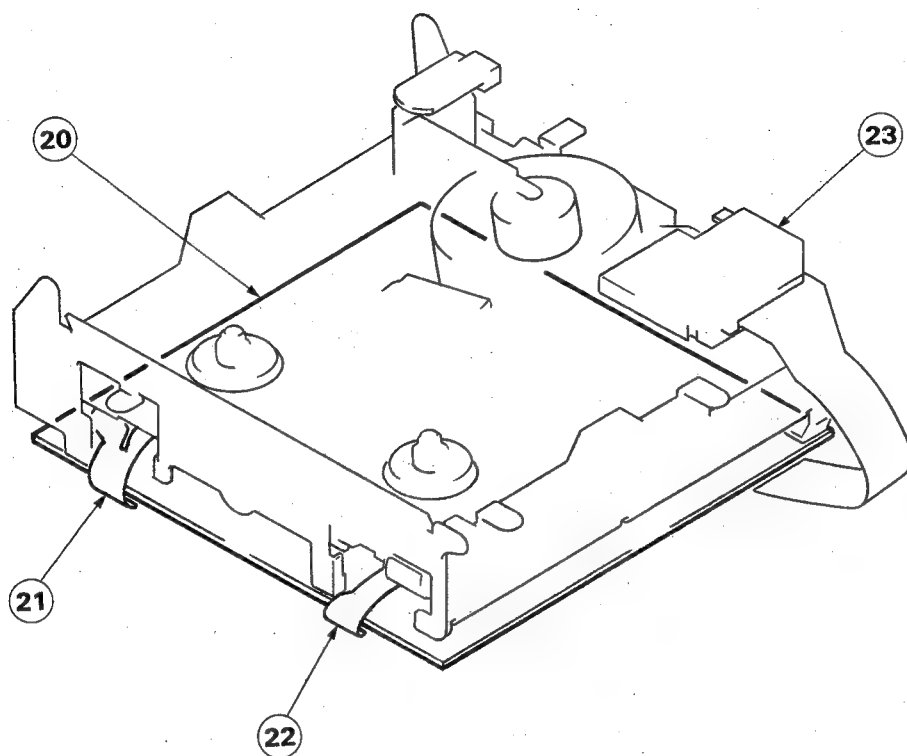


- ⑪ PR-159/159P BOARD
- ⑫ IE-33/33P BOARD
- ⑬ ES-4/4P BOARD
- ⑭ AT-70 BOARD
- ⑮ MB-381/381P BOARD

- ⑯ AU-162/162P BOARD
- ⑰ CR-43/43P BOARD
- ⑱ VO-43/43P BOARD
- ⑲ MB-384/384P BOARD



## Mechanical Deck



- ②① SS-50/50P BOARD
- ②① FP-89 FLEXIBLE CARD WIRE
- ②② FP-90 FLEXIBLE CARD WIRE
- ②③ SBX-1508 BOARD

## 1-6. PRINTED CIRCUIT BOARD

### CAMERA

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	IE-33	VIDEO AMP IMAGE ENHANCER COLOR BAR GENERATOR
	PR-159	VIDEO PROCESS
	ES-4	CHROMA ENCODER SYNC GENERATOR
SYSCON	AT-70	CAMERA SYSTEM CONTROL
Others	MB-384	MOTHER BOARD CCD TIMING PULSE GENERATOR
	SW-484	MODE SW
	SW-485	
	SW-506	
	SW-507	

### VTR

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	VO-43	REC Y/C/AFM/ATF MIX Y PROCESS
	CR-43	CHROMA PROCESS
AUDIO	AU-162	PCM AUDIO PROCESS
	FP-40	AUDIO INPUT/OUTPUT AMP
	CP-188	EARPHONE JACK
TIME CODE	AU-162	TIME CODE PROCESS
SYSCON SERVO	SS-50	VTR SYSTEM CONTROL SERVO SYSTEM, MECHANISM CONTROL ATF SERVO
	MB-381	TAPE TOP/END SENSOR
	KY-191	FUNCTION KEY BOARD
	FP-40	MODE SW BACK TALLY
Others	MB-381	MOTHER BOARD
	CP-184	CONNECTOR PANEL
	CP-188	
	CP-189	
	CP-221	REMOTE LED
	SBX-1508	RP AMP

## 1-7. CONNECTORS

When external cables are connected to the various connectors of the connector box during maintenance, the hardware listed below or equivalents must be used.

PANEL INDICATION	CONNECTOR
VIDEO OUT  (BNC)	1-560-069-11 PLUG, BNC or B-B cable assembly (Cable length 1.5m, optional)
VF (8P, FEMALE)	9-994-797-01 CABLE, VF
OPTION  (6P, FEMALE)	1-560-078-00 PLUG, 6P MALE HIROSE HR10-7PA-6P (3) equality 1-560-078-21 PLUG, 6P MALE HIROSE HR10-7PA-6P equality 1-566-365-11 PLUG, 6P MALE HIROSE HR10A-7P-6P (01) equality 1-566-365-21 PLUG, 6P MALE HIROSE HR10A-7P-6P (02) equality
DC  (4P, MALE)	1-508-362-00 PLUG, 4P FEMALE CANON XLR-4-11C equality
MIC  (3P, FEMALE)	1-508-084-00 PLUG, 3P MALE CANON XLR-3-12C equality

## 1-8. CONNECTOR INPUT/OUTPUT SIGNAL

### [INPUT]

GENLOCK IN ; BNC Type  
1Vp-p, 75Ω

### [OUTPUT]

CAMERA VIDEO OUT ; BNC Type  
Composite signal  
1.0Vp-p±1.0dB, 75Ω  
negative sync, unbalanced

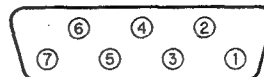
AUDIO OUT L/R ; Pin jack type  
-10dBu, 47kΩ unbalanced

VIDEO OUT ; BNC Type

VIDEO OUT ; Pin jack type  
Composite signal  
1.0Vp-p±1.0dB, 75Ω  
negative sync, unbalanced

RFU DC OUT ; Special mini jack  
5V DC

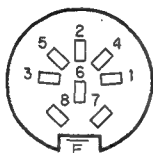
### LENS (7P)



(WIRING SIDE)

Pin No.	Signal	Specification
1	VF VIDEO CONT IN	ON : 0±5Vdc
2	VTR START/STOP IN	TRIG : 0±0.5V
3	POWER +12V DC GND	GND for +12Vdc
4	COMPULSORY AUTO IRIS CONT OUT	5±0.5Vdc
5	IRIS CONT OUT	F16 : 3.4Vdc F2.8 : 6.2Vdc
6	POWER +12V DC OUT	10.5V to 17Vdc, 3A
7	(SPARE)	

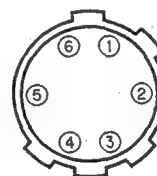
### VF (8P, FEMALE)



(WIRING SIDE)

Pin No.	Signal	Specification
1	POWER +12V DC GND	GND for +12Vdc
2	REC TALLY IND OUT	$Z_o \leq 1.1k\Omega$
3	E. SHUTTER IND OUT	$Z_o \leq 1.1k\Omega$
4	VF VIDEO (G) OUT	GND for VF VIDEO
5	BATT IND OUT	$Z_o \leq 1.1k\Omega$
6	VF VIDEO (X) OUT	$V = 1V_{p-p}$
7	POWER +12V DC OUT	10.5V to 17Vdc, 3A
8	GAIN UP IND OUT	$Z_o \leq 1.1k\Omega$

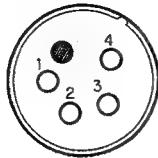
### OPTION (6P, FEMALE)



(WIRING SIDE)

Pin No.	Signal	Specification
1	VF VIDEO CONT IN	ON : 0±0.5Vdc
2	VTR START/STOP IN	TRIG : 0±0.5V
3	POWER +12V DC GND	GND for +12Vdc
4	COMPULSORY AUTO IRIS CONT OUT	5±0.5Vdc
5	IRIS CONT OUT	F16 : 3.4Vdc F2.8 : 6.2Vdc
6	POWER +12V DC OUT	10.5V to 17Vdc, 3A

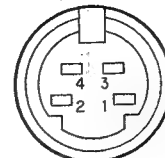
DC (4P, MALE)



(EXT VIEW)

No.	Signal	Specification
1	EXT DC IN (G)	GND
2		
3		
4	EXT DC IN (X)	10.5 to 17.0Vdc

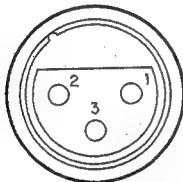
S VIDEO (4P, FEMALE)



(EXT VIEW)

No.	Signal	Specification
1	LUMINANCE OUT (G)	GND for LUMINANCE
2	CHROMINANCE OUT (G)	GND for CHROMINANCE
3	LUMINANCE OUT (X)	1.0Vp-p±1.0dB, 75Ω unbalanced, negative sync
4	CHROMINANCE OUT (X)	0.286Vp-p±1.0dB, 75Ω unbalanced

MIC (3P, FEMALE)



(EXT VIEW)

No.	Signal	Specification
1	MIC IN (G)	GND
2	MIC IN (X)	MIC: -60dBu Zi≥3kΩ BALANCED
3	MIC IN (Y)	LINE: +4dBu Zi≥10kΩ BALANCED

## 1-9. SPARE PARTS

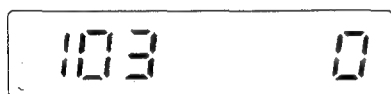
- (1) The  $\Delta$ -marked components are critical to safety. Replace only with same components as specified.
- (2) Replacement parts supplied from the Sony Parts Center will sometimes have a different shape from the original parts. This is due to accommodating the improved parts and/or engineering changes or standardization of genuine parts. This manual's exploded views and electrical spare parts list indicate the part numbers of the standardized genuine parts at the present. Regarding engineering part changes in our engineering department, refer to Sony service bulletins and service manual supplements.
- (3) The parts marked with s in the SP column of the exploded views and electrical spare parts list are normally stocked for replacement purposes. The parts marked with o in the SP column are not normally required for routine service work. Orders for parts marked with o will be processed, but allow for additional delivery time.

## 1-10. HOW TO OPERATE THE UNIT WITHOUT CASSETTE TAPE (MUTING OF THE TAPE BEGINNING/ END SENSORS)

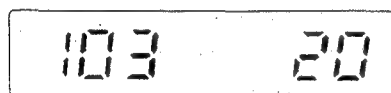
- When replacing mechanical parts, sometimes there is a case need to select modes without cassette tape inserting. Mute the tape top/end sensors in the following ways and then operate the unit. If using the mode selector, it is to necessary to mute the tape top/end sensors.

### (1) Using the SELF DIAG mode

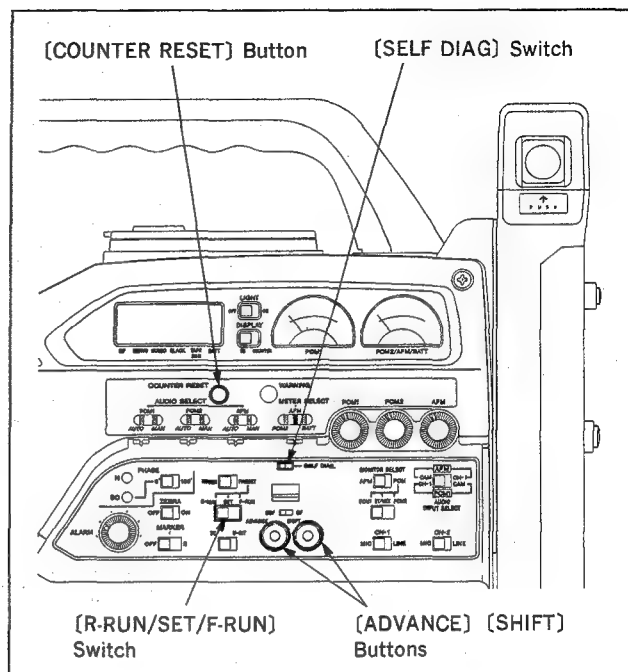
1. Turn on the [SELF DIAG] switch on the side of the unit.
2. Set the [R-RUN/SET/F-RUN] switch to SET side.
3. Select menu "103" by pressing [ADVANCE] or [SHIFT] button.



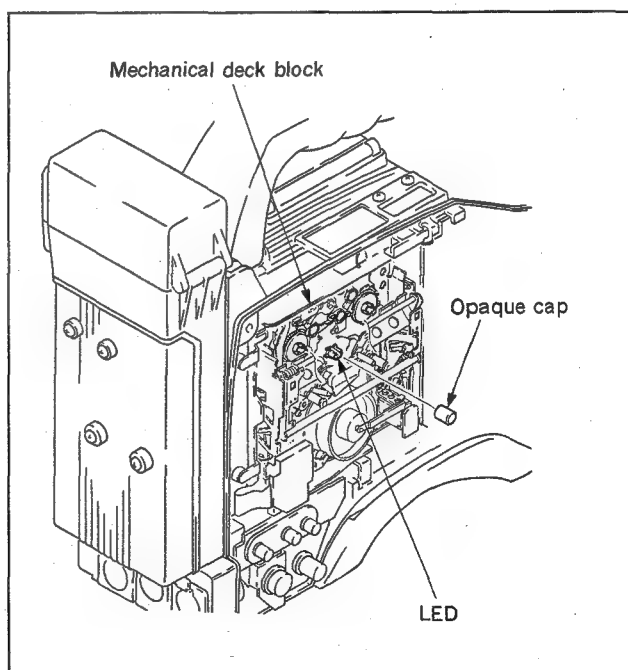
4. Set the [R-RUN/SET/F-RUN] switch to R-RUN side and select data "20" by pressing [ADVANCE] or [SHIFT] button.



5. The tape top/end sensors will be muted by pressing the [COUNTER RESET] button.
6. Turn off the [SELF DIAG] switch. Turn off the power momentarily.



- (2) Put an opaque cap on the LED as shown in the figure.

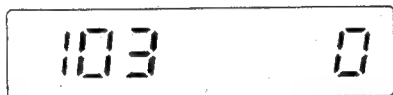


## 1-11. CASSETTE TAPE REMOVAL PROCEDURE WHEN NORMAL EJECTION IS NOT POSSIBLE

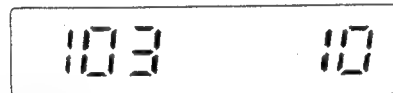
When the cassette tape cannot be ejected from the unit because the tape is wound around the drum, take the following action.

### 1-11-1. Using the SELF DIAG mode

1. Remove the cassette lid and side panel (left) according to Section 1-1.
2. Turn on the [SELF DIAG] switch on the side of the unit.
3. Set the [R-RUN/SET/F-RUN] switch to SET side.
4. Select menu "103" by pressing [ADVANCE] or [SHIFT] button.



5. Set the [R-RUN/SET/F-RUN] switch to R-RUN side.
6. Select data "10" by pressing [ADVANCE] or [SHIFT] button.



7. Press the [COUNTER RESET] button.
8. Operate the [F FWD] or [REW] button on the top panel to unthread. (Press the [STOP] button to stop unthreading.) Move that No. 5 and No. 6 guides of the coaster (right) assembly in order to be placed as shown in the Fig. 1. Check that the No. 5 and No. 6 guides are not under the HC roller assembly.
9. Remove the tape from the No. 1 through No. 7 guides and pinch roller assembly.

**Note 1:** When removing the tape from the guides, be careful not to damage it.

**Note 2:** The mechanical chassis's sliding portion of the coaster (right) and (left) assemblies are smeared grease. Do not be adhered grease to the tape.

10. Turn the rotor of the capstan motor in the direction of arrow A or B by hand and wind up the tape into the cassette. (Fig. 2)

The direction of arrow A: wind up the tape to S side

The direction of arrow B: wind up the tape to T side

11. Push the arrow of lock lever by hand as shown in Fig. 3 and eject the cassette tape.
12. Turn off the [SELF DIAG] switch. Turn off the power momentarily.

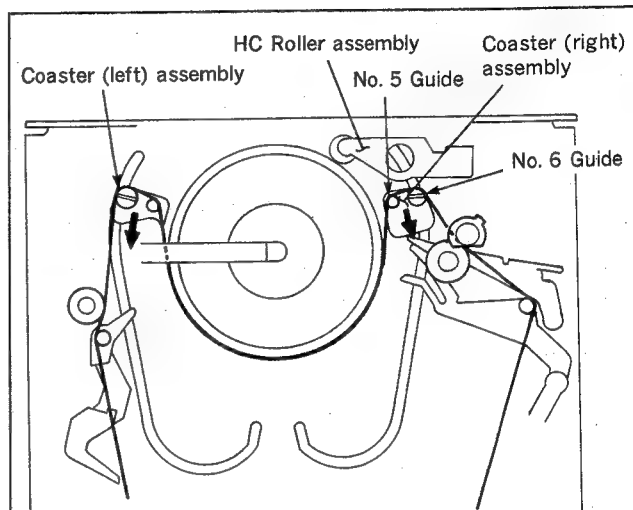
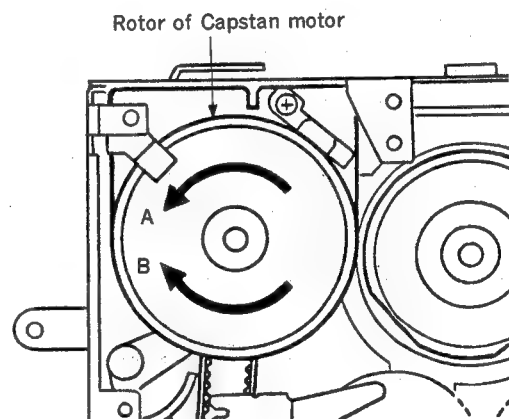


Fig. 1



Back of mechanical chassis

Fig. 2

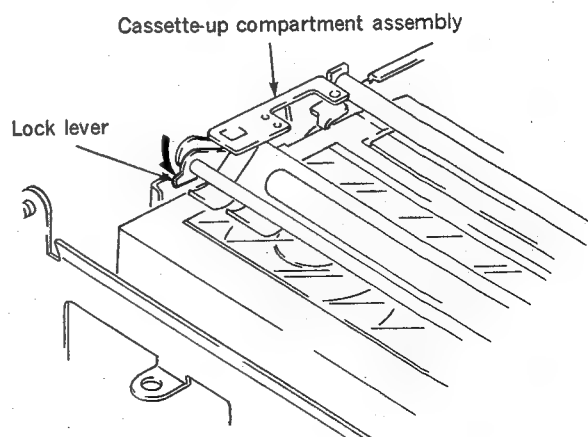


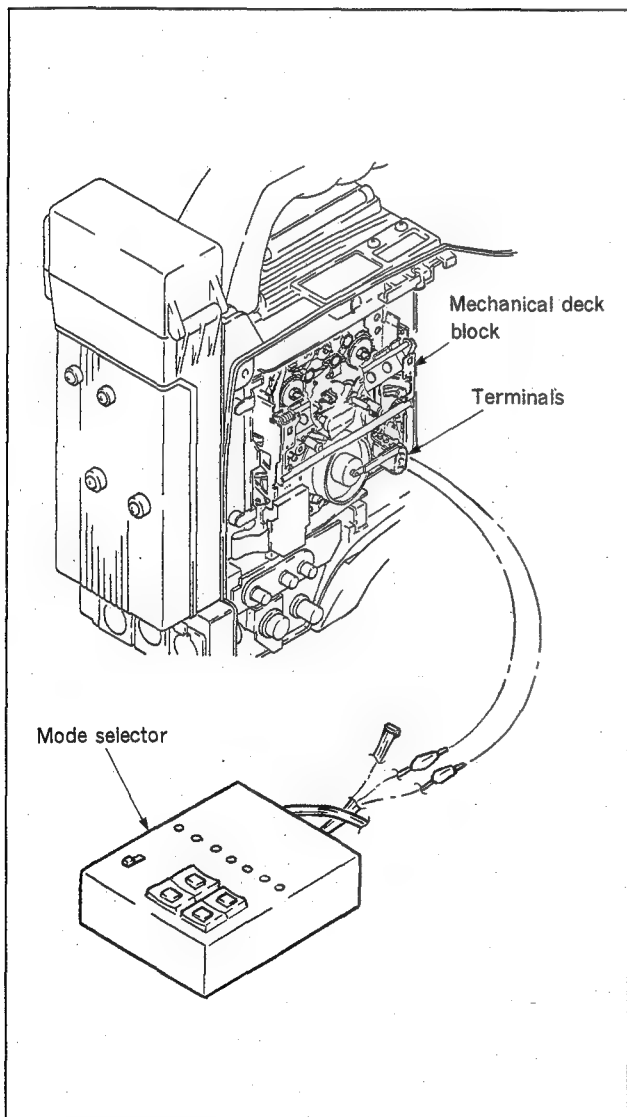
Fig. 3

### 1-11-2. Cassette Tape Removal in Case of Power Supply Trouble

- Using the mode selector

Fixture: Mode Selector (J-6080-825-A)

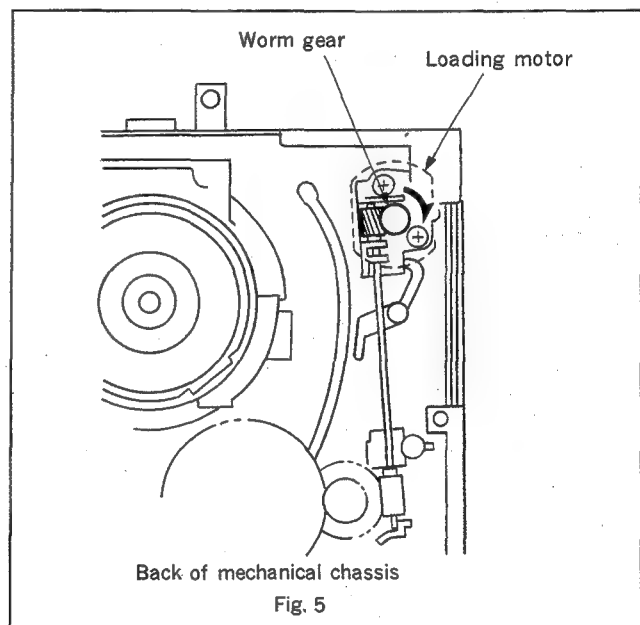
1. Remove the cassette lid and side panel (left) according to section 1-1.
2. Touch two clips of the mode selector to the terminals of the loading motor. (Fig. 4) Operate the [LOAD] or [UNLOAD] button of the mode selector to unthread. Move that No. 5 and No. 6 guides of the coaster (right) assembly in order to be placed as shown in the Fig. 1. Check that the No. 5 and No. 6 guides are not under the HC roller assembly.



3. Eject the cassette tape according to section 1-11-1, procedures 9 to 11.

- Not using the mode selector

1. Remove the cassette lid and side panel (left) according to section 1-1.
2. Remove the side panel (right) according to section 1-1.
3. Remove the SS-50/50P board according to section 1-4.
4. Turn the worm gear of the loading motor in the direction of the arrow with a thin rod etc.. (Fig. 5) Move that the No. 5 and No. 6 guides of the coaster (right) assembly in order to be placed as shown in Fig. 1. Check that the No. 5 and No. 6 guides are not under the HC roller assembly.



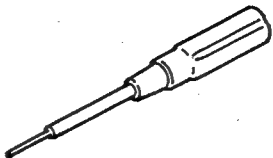
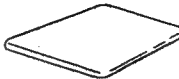
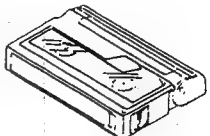
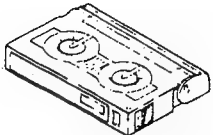
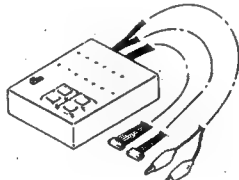
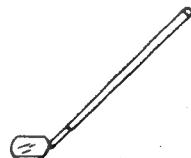
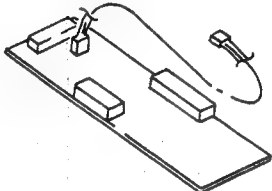
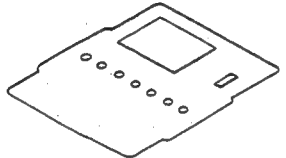


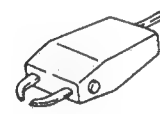
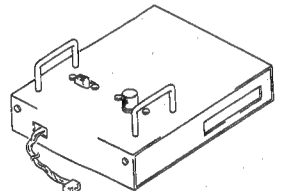
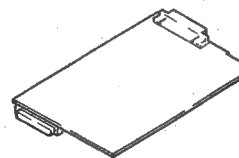
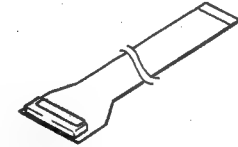
5. Eject the cassette tape according to section 1-11-1, procedures 9 to 11.



1-12. FIXTURES

Ref. No.	Parts No.	Description	Application
J-1	7-700-766-01	Hexagonal Screwdriver (0.89mm)	Tape Path Adjustment
J-2	7-741-900-53	Wiping Cloth	Cleaning
J-3	8-967-992-12	Alignment Tape, WR2-3NS	Switching Position Adjustment
J-4	8-967-995-02	Alignment Tape, WR5-1NP	Tape Path Adjustment
J-5	8-967-995-13	Alignment Tape, WR5-7NE	Video Frequency Response Adjustment
J-6	8-967-995-42	Alignment Tape, WR5-5NSP	Video Adjustment
J-7	8-967-995-43	Alignment Tape, WR5-8NSE	Audio and Video Adjustment (SP)
J-8	J-6080-824-A	FWD, REV Winding Torque Cassette	S and T Reel Tables Winding Torque Check
J-9	J-6080-825-A	Mode Selector	Check, Adjustment and Replacement of Mechanical Block
J-10	J-6080-840-A	Small Adjustment Mirror	Tape Path Adjustment
J-11	J-6082-021-A	Mode Selector III Conversion Connector	Check, Adjustment and Replacement of Mechanical Block
J-12	J-6082-023-A	Mode Selector III Panel	Check, Adjustment and Replacement of Mechanical Block
J-13	Y-2031-001-1	Cleaning Fluid	Cleaning
J-14	—	Rotary Drum Tool (supplied accessory of Repair Rotary Upper Drum)	Replacement of Rotary Upper Drum
J-15	Commercially Sold	Head Degausser	Head Degauss
J-16	J-6365-410-A	Tracking Adjustment Tool (JH-541)	Tracking Adjustment
J-17	J-6391-180-A	Extension Board (EX-337)	Check and Adjustment of Boards
J-18	J-6360-990-A	SS Extension Flexible Card Wire (JH-099) (26P)	Check of SS Board and Mechanical Deck * 1
J-19	J-6361-000-A	SS Extension Flexible Card Wire (JH-100) (14P)	Check of SS Board and Mechanical Deck
J-20	J-6361-010-A	SS Extension Flexible Card Wire (JH-101) (13P)	Check of SS Board and Mechanical Deck
J-21	J-6361-020-A	SS Extension Flexible Card Wire (JH-102) (11P)	Check of SS Board and Mechanical Deck

\* 1 Two SS extension card wires are required to extend the SS board and mechanical deck.

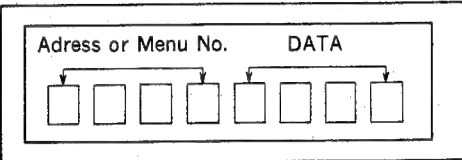
J-1 	J-2 	J-3, J-4, J-5, J-6, J-7 	J-8 
J-9 	J-10 	J-11 	J-12 
J-13 	J-14  (Supplied accessory of Repair Rotary Upper Drum)	J-15 	J-16 
J-17 	J-18, J-19, J-20, J-21 		

1-13. DIAGNOSTIC MODE

The LCD display on the side of the EVW-300/300P can be set to provide an hourmeter indication, the battery end/near end voltage setting, and also a self diagnostic display.

Operation method

- 1. Set the [SELF DIAG] switch on the side of the unit to ON.



- (Menu 102 will appear on the LCD display. VTR OUT will go into the external input mode.)
- 2. To move the menu, set to the [R-RUN/SET/F-RUN] switch on the side of the unit to SET.
  - 3. Press the [ADVANCE] or [SHIFT] button on the side of the unit, and select the desired menu.
  - 4. To move data, set the [R-RUN/SET/F-RUN] switch to R-RUN, then press the [ADVANCE] or [SHIFT] button to select the data. By pressing the [COUNTER RESET] button, the data will be stored.
  - 5. Finally, set the [SELF DIAG] switch to OFF, and turn off the power momentarily.

Mode table

Menu	Menu description	LCD display	Description
102	External select E • E mode menu	102 0000	Factory adjustment mode When the unit is put into this mode, the signal from VTR VIDEO OUT is not output, however this is not a fault.
103	Motor manual control menu	103 10	Loading motor control Put the unit into this mode to remove a cassette tape when the tape is wound around the drum. For details, refer to section 1-11.
		103 11	Drum control Put the unit into this mode to check the rotation system of the drum. Rotate the drum by pressing the [F FWD] or [REW] button at the top of the unit. Stop rotation by pressing the [STOP] button.
		103 12	Capstan control Put the unit into this mode when checking the rotation system of the capstan motor. Rotate the capstan motor by pressing the [F FWD] or [REW] button at the top of the unit. Stop rotation by pressing the [STOP] button.
		103 20	Tape top/end sensor muting Put the unit into this mode to operate the VTR without cassette tape. For details, refer to section 1-10.
104	VTR adjustment mode menu	104 4	Head framing OFF
		104 0	Head framing ON
		104 1	This mode is not used. Head framing OFF

Menu	Menu description	LCD display	Description
		104 2	VTR adjustment 2. Enter this mode to perform Y/C SEP and IR adjustments. For details, refer to section 8. Head framing OFF
		104 3	This mode is not used. Head framing OFF
105	ATF 1/3 shift adjustment menu	105 00	NO ACTIVE
		105 11	Enter this mode when performing tracking adjustment. For details, refer to section 5.
201	HOURLMETER [ON period] display menu	201 xxxx	Displays the total period during which the unit is turned ON. The actual ON period is 10 times the displayed value. e.g. A displayed value of 0001 means 10 hours. Refer to the address map (5) to see the displayed value for an ON period of less than 10 hours.
202	HOURLMETER (drum) display menu	202 xxxx	Displays the total period during which the drum rotates. The actual rotation period is 10 times the displayed value. e.g. A displayed value of 0001 means 10 hours. Refer to the address map (5) to see the displayed value for a drum rotation period of less than 10 hours.
203	Emergency code menu Tape top/end menu	203 xx	Displays the contents of an existing abnormality. For details, refer to the address map (7).
204	REC PAUSE position adjustment menu	204 xx	Used to adjust the REC PAUSE position. For details, see section 1-15.
205	Loading operation count display menu	205 xxxx	Used to display the number of loading operations of the unit. [R-RUN/SET/F-RUN] switch → [SET] position The number of loading operations is equal to 256 times the displayed value (hexadecimal value). e.g. value of 0001 → 256 operations
		xxxxxx	[R-RUN/SET/F-RUN] switch → [R-RUN] position The number of loading operations is displayed on all digits. (hexadecimal value)
501	Initialize menu Note: Before entering this mode, connect TP502 and GND (E1) on the FP-40/40P board with a shorting clip.	501 01	NTSC parameter set PAL parameter set } RESET during overhaul
		501 02	
		501 11	Enter this mode to set the default values of the BATTERY END/NEAR END voltage, LITHIUM BATTERY END voltage and switching position. Be sure to set the default value after replacing the SS-50/50P board or after replacing IC108 on the SS-50/50P board.

Menu	Menu description	LCD display	Description
503	Battery end setting menu	503    xx	Enter this mode to set the battery end voltage. For details, refer to section 1-14.
504	Battery near end setting menu	504    xx	Enter this mode to set the battery near end voltage. For details, refer to section 1-14.
505	Memory/EEPROM scan display menu  <div>505    xxxx</div> Set the [R-RUN/SET/F-RUN] switch to the R-RUN position using this screen, then select arbitrary data using the [ADVANCE] or [SHIFT] button. Refer to the address maps (1) to (6) for details of modes other than the modes shown at right.	<div>0050   xx   xx</div> <div>Table 1</div>	Final mechanical mode This mode is used to display the final mechanical operation of the unit. (See Table 1.)
		<div>0072   xx   xx</div> <div>Table 1</div>	Actual mechanical mode Displays the actual mechanical operation of the unit. (See Table 1.)
		<div>0220   xx   xx</div> <div>Table 2</div>	Emergency mode (first) Use this mode when analyzing the cause of a defect in the unit after switching it OFF. The cause of the first defect that occurred will be displayed. (See Table 2.)
		<div>0224   xx   xx</div> <div>Table 2</div>	Emergency mode (final) Use this mode when analyzing the cause of a defect in the unit after switching it OFF. The cause of the last defect that occurred will be displayed. (See Table 2.)
		<div>0222   xx   xx</div> <div>Table 1</div>	Emergency mechanical mode (first) Use this mode when analyzing the cause of a defect in the unit after switching it OFF. The mechanical mode corresponding to the defect that occurred first will be displayed. (See Table 1.)
		<div>0226   xx   xx</div> <div>Table 1</div>	Emergency mechanical mode (final) Use this mode when analyzing the cause of a defect in the unit after switching it OFF. The mechanical mode corresponding to the defect that occurred last will be displayed. (See Table 1.)
506	EEPROM change display	506    xxxx	The data in the EEPROM can be changed. For details, see the address map (1).
507	RAM memory change menu  <div>507    xxxx</div> Set the [R-RUN/SET/F-RUN] switch to the R-RUN position using this screen, then select the following data using the [ADVANCE] or [SHIFT] button and then press the [COUNTER RESET] button.  <div>007600 10</div>	0060   xxxx	The video data can be changed manually. For details, refer to address map (6).
101	SW POSITION adjustment menu	101    xxxx	Used when adjusting the switching position. For details, refer to section 5-8.

Table 1

Meaning of display	Display		Meaning of display	Display	
	MECH mode (NORMAL)	MECH mode (EMERGENCY)		MECH mode (NORMAL)	MECH mode (EMERGENCY)
EJECT	01	10	FF	03	30
EJECT DEW	11	11	REW	83	38
TAPE UNLOADING	31	13	REC	04	40
NORMAL STOP	02	20	REC PAUSE	14	41
TAPE LOADING	12	21	AUDIO DUB	84	48
BATTERY DOWN STOP	32	23	AUDIO DUB PAUSE	94	49
STOP DEW	42	24	FRAME REC	A4	4A
STOP EMERGENCY	52	25	REC PAUSE TOP	B4	4B
TAPE END STOP	62	26	EDIT SEARCH CUE	25	52
STOP TAPE TOP	72	27	EDIT SEARCH REVIEW	35	53
STOP ZERO	92	29	REC REVIEW FORWARD	85	58
STOP EMERGENCY #0	A2	2A	REC REVIEW REVERSE	95	59
STOP EMERGENCY #1	B2	2B	EDIT SEARCH FORWARD	A5	5A
STOP EMERGENCY #2	C2	2C	EDIT SEARCH REVERSE	B5	5B
UNLOAD STOP	E2	2E	EDIT SEARCH PAUSE	F5	5F
			PB	06	60
			×1	26	62
			REVERSE (−×1)	36	63

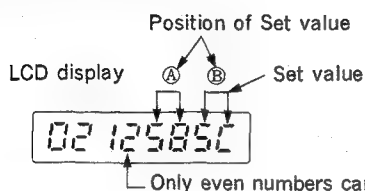
Table 2

Trouble	Display	Can tape be ejected ?
Normal operation	00 00	No
Loading motor trouble	00 01	↓
REEL FG trouble when unthreading	00 02	
REEL FG trouble except when unthreading	00 04	
Capstan motor trouble	00 08	
Drum FG trouble when rotating	01 00	Yes
Drum PG trouble when rotating	02 00	↓
FG trouble when the drum rises up	21 00	
PG trouble when the drum rises up	22 00	
Drum FG trouble when threading	41 00	
Drum PG trouble when threading	42 00	
Drum FG trouble when unthreading	81 00	
Drum PG trouble when unthreading	82 00	
Phase trouble when drum is rotating	-- --	

Use the address map to obtain more detailed data in the self diagnostic mode. Refer to menu "505" of section 1-13 "DIAGNOSTIC MODE" for the method of displaying the address.

#### Address map (1) (Menu 505, 506)

This map is used mainly to enable the history of the unit to be checked.



Example: By setting the address to "0212", the set values of addresses "0213", "0012" and "0013" can be seen simultaneously. On the display at left, the set value "58" of address 0213 can be displayed at (A).

Menu 505 Address (LCD display)	* 1 Menu 506 Address (LCD display)	Position of set value	Contents						Set value
0200	0000	Ⓑ							
(0201)	(0001)	Ⓐ	MODE NTSC : Set value 1b PAL : Set value 9b						1b
0202	0002	Ⓑ	When bit 0 is 0, the EN LI WARN status is set. When bit 1 is 1, the EN BC BACK TALLY status is set.						※ 2
0204	0004	Ⓑ	Switching position (lower digits); Value set with menu 101						Adj. value
(0205)	(0005)	Ⓐ	Switching position (upper digits); Value set with menu 101						Adj. value
0206	0006	Ⓑ	Battery A/D conversion value (END); Value set with menu 503						Adj. value
(0207)	(0007)	Ⓐ	Battery END set area						Adj. value
0208	0008	Ⓑ	Battery A/D conversion value (NEAR END); Value set with menu 505						Adj. value
(0209)	(0009)	Ⓐ	Battery NEAR END set area						Adj. value
0210	0010	Ⓑ	SR data storage area	EDIT OFF	MP	Hi-8	LP	6F	
(0211)	(0011)	Ⓐ	SR data storage area	EDIT OFF	MP	Hi-8	SP	65	
0212	0012	Ⓑ	SR data storage area	EDIT OFF	MP	NOR	LP	5C	
(0213)	(0013)	Ⓐ	SR data storage area	EDIT OFF	MP	NOR	SP	58	
0214	0014	Ⓑ	SR data storage area	EDIT OFF	ME	Hi-8	LP	6F	
(0215)	(0015)	Ⓐ	SR data storage area	EDIT OFF	ME	Hi-8	SP	65	

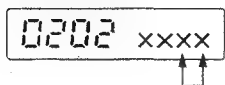
Address in parenthesis ( ) is not displayed on the LCD display. To confirm its set value, display the even-number address and read the value as shown in the above illustration.

Menu 505	* 1 Menu 506	Position of set value	Contents					Set value
Address (LCD display)	Address (LCD display)							
0216	0016	Ⓑ	SR data storage area	EDIT OFF	ME	NOR	LP	5C
(0217)	(0017)	Ⓐ	SR data storage area	EDIT OFF	ME	NOR	SP	58
0220	0020	Ⓑ	Code for abnormality that occurred first (lower digits) (first emergency mode)					※ 3
(0221)	(0021)	Ⓐ	Code for abnormality that occurred first (upper digits) (first emergency mode)					※ 3
0222	0022	Ⓑ	Mechanical mode when an abnormality occurred first (first emergency mode)					※ 3
0224	0024	Ⓑ	Code for an abnormality that occurred last (lower digits) (final emergency mode)					※ 3
(0225)	(0025)	Ⓐ	Code for an abnormality that occurred last (upper digits) (final emergency mode)					※ 3
0226	0026	Ⓑ	Mechanical mode when an abnormality occurred last (final emergency mode)					※ 3
0230	0030	Ⓑ	POWER ON HOURS DATA (lower digits)	0230	xxxx	DATA ⑦ ×10 hours		※ 4
0232	0032	Ⓑ	POWER ON HOURS DATA (upper digits)	0232	xxxx	DATA ⑦ ×1000 hours		
0234	0034	Ⓑ	DRUM HOURS DATA (lower digits)	0234	xxxx	DATA ⑦ ×10 hours		※ 5
0236	0036	Ⓑ	DRUM HOURS DATA (upper digits)	0236	xxxx	DATA ⑦ ×1000 hours		
0240	0040	Ⓑ	REC PAUSE SLOW TRANCON (00 to FF)					※ 6
0242	0042	Ⓑ	LI BATTERY END SETTING (2.5V)					7F
0244	0044	Ⓑ	LOADING DATA DATA×256 times					※ 7

- \* 1 This is the map for menu 506.  
Normally, it is not used. Use menu 505 to observe the contents of the data.

- \* 2 Address 0202 display

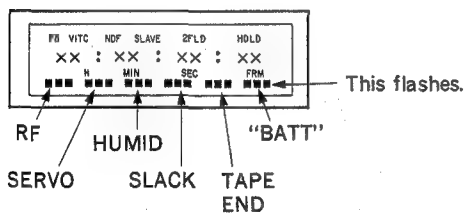
LCD display



Set value

Set value \ Bit	7	6	5	4	3	2	1	0	Set contents (operation)
00	0	0	0	0	0	0	0	0	Lithium battery warning
	0				0				
01	0	0	0	0	0	0	0	1	No display or warning (BC BACK TALLY and lithium battery)
	0				1				
02	0	0	0	0	0	0	1	0	BC BACK TALLY display + lithium battery warning
	0				2				
03	0	0	0	0	0	0	1	1	BC BACK TALLY display
	0				3				

The "BATT" part at the bottom of the LCD display flashes as a warning to indicate that the voltage of the lithium battery has dropped.



- \* 3 The state of the unit in the event of an abnormality is indicated. See Tables 1 and 2 on the previous page for details.
- \* 4 The total period during which the unit is turned on is indicated. For details, see the description in menu 201. Refer to the address map (5) to see the displayed value for an ON period of less than 10 hours.
- \* 5 The total period of rotation of the drum is indicated. For details, see the description in menu 202. Refer to address map (5) to see the displayed value for drum rotation period of less than 10 hours.
- \* 6 The set value differs depending on the unit, however it is "F0" in almost all cases. The factory setting can be seen by selecting menu 204. Refer to section 1-15 for details on adjustment.
- \* 7 You can observe the number of loading operations.  
Multiply the number displayed as the set value by 256. For example, if the indicated set value is "02", the actual value will be  $2 \times 256 = 512$  operations. Refer to the address map (5) if the number of loading operations is less than 256.



## Address map (2) (Menu 505)

Enables the status of the unit to be checked.

LCD display

0050xx□□

e.g. If the indication on the LCD display is "006E"

006E xx 93

Hexadecimal indication

Bit	7	6	5	4	3	2	1	0
1 or 0	1	0	0	1	0	0	1	1
Hexadecimal number	8	0	0	1	0	0	2	1
	9				3			

Address (LCD display)	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	Remark
0050	Same as 0050 xxxx of menu 505								
006E	1: MP 0: ME	1: PB 0: EE	(※ 1) 0: AGC SLOW	1: Always "1"	1: JOG ON	1: VIDEO MUTE	1: LP 0: SP	1: E(※ 2) 0: L(※ 2)	
0072	Same as 0072 xxxx of menu 505.								
0076	1: FE ON	1: DRUM LOCK	—	0: CAP LOCK (PB)	—	—	—	—	Electrical system
0078	(PB) 1: LP 0: SP	(PB) 1: E(※ 2) 0: L(※ 2)	1: TAPE END	1: TAPE TOP	—	—	—	—	Tape data
007A	1: MP 0: SP	1: CLOG (※ 4)	1: ME 0: MP	1: REC PROOF					Mechanical switch data
007C	1: DEW (※ 3)	—	1: REC CLOG	1: REC	1: UNLOCK 0: LOCK	1: MECHA SW2 (mode switch)	1: MECHA SW1 (mode switch)	1: MECHA SW0 (mode switch)	Mechanical switch data and electri- cal system

\* 1 EDIT SEARCH REV alone is "0".

\* 2 E: HIGH BAND mode  
L: STANDARD mode

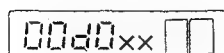
\* 3 DEW DETECT FLAG

\* 4 RF output "1": RF signal exists (normal)  
"0": RF signal does not exist (abnormal).

### Address map (3) [Menu 505]

The operation status of the system control circuit on the SS-50/50P board can be checked by operating the external switch or button indicated below.

LCD display



e.g. If the indication on the LCD display is "00d2"



⇩

Bit	7	6	5	4	3	2	1	0
1 or 0	1	0	0	0	0	0	0	1
Hexadecimal number	8	0	0	0	0	0	0	1
	8				1 (VTR POWER SW → ON)			

The indication "1" or "0" is displayed by operating an arbitrary switch or button.

"81" will appear if the **EJECT** button is pressed.

Address (LCD display)	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
00d0	—	—	1: PLAY	1: STOP	—	—	—	—
00d2	1: EJECT	1: REC (VTR start KEY)	1: REW	1: FF	—	—	—	1: VTR POWER SW → ON
00d6	—	—	—	—	—	1: EDIT SEARCH "REV"	1: EDIT SEARCH "FWD"	—
00d8	1: (*1) ADVANCE	—	—	1: SHIFT	—	—	1: COUNTER RESET	—
00dA	(DISPLAY) 1: TC 0: COUNTER	1: DF 0: NDF	—	1: PRESET 0: REGEN	1: R-RUN (*2)	—	—	1: U-BIT 0: TC

\* 1 To check the ADVANCE button, press the SHIFT button while **00d8xx** appears on the LCD display to cause the ② part to flash, then check the operation of the ADVANCE button.

\* 2 To perform self-diagnosis, this switch must be set to the R-RUN side, hence the bit is always "1".

#### Address map (4) [Menu 505]

Indicates the operation status of TIME CODE in IC302 of the AU-162/162P board.

e.g. TC mode

LCD display

0 1E4xxFE

\* 1 ⑥

0 1EAxxxx

④ ⑥

\* 1 In the case of 01E4, ⑥ is "FE".

This means that the unit can enter the TC mode.

Address (LCD display)	WORD	⑥ refers to the following unit when the tape is played back.	Contents	
0 1E4	0	MODE NUMBER	FE	⑥ is "FE" in the case of this address.
0 1E6	1	HOUR	3A	If ④ is the display at left, TC will not operate correctly.
0 1E8	2	MINUTE	7A	
0 1EA	3	SECOND	7A	
0 1EC	4	FRAME	3A	

e.g. U-BIT mode

0 1E4xxFd

⑥

If data is read correctly, "Fd" will be displayed.

Address (LCD display)	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	Display ⑥
0 1E4	1	1	1	1	1	1	0	1	* 2Fd
	1	1	1	1	1	1	1	0	* 3FE
	1	1	1	0	1	1	1	0	* 3EE
	0	0	0	0	0	0	0	0	* 300

\* 2 Fd normal

\* 3 FE, EE, 00: Abnormal

# Address map (5) (Menu 505)

Enables the period during which the unit was used to be checked.

LCD display

0 120 xxxx

Example

0 120 xxxx

Value

Address (LCD display)	Display example	Contents
<p>0 120</p> <p>Period during which the unit is powered (display for less than 10 hours)</p>	<p>Example</p> <p>0 120 x 145</p>	<p>This is the total period during which the unit is powered. The example at left indicates that the unit was powered for 1 hour and 15 minutes.</p>
<p>0 122</p> <p>DRUM rotation period (display for less than 10 hours)</p>	<p>Example</p> <p>0 122 115 x</p>	<p>This is the total period during which the drum rotated. The example at left indicates that the drum head was used for a period of 1 hour and 45 minutes.</p>
<p>0 126</p> <p>Number of loading operations (indication for less than 256 operations)</p>	<p>Example</p> <p>0 126 x x 1C</p>	<p>In the example at left, "1" means 16 operations, and "2" means 36 operations. "C" means 12 in hexadecimal notation. Consequently, the number of loading operations is <math>16 + 12 = 28</math>.</p>

# Address map (6) (Menu 505, 507)

VIDEO data : Enables the operation status of IC201 (CXA1207R) on the SS-50/50P board to be checked.

LCD display

00b0 xxxx

Address (LCD display)	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
00b0	③ NCLP2	② Yd	① CORRE OFF	—	—	—	—	—
00b2	⑪ DOC OFF	⑩ CAMERA REC	⑨ E	⑧ CFL1	⑦ CFL2	⑥ NCL1	⑤ NCL2	④ NCLP1
00b4	⑬ PB	⑫ S	⑪ INSEL	⑩ VIDEO AGC	⑨ DIS-CHARGE	⑧ W CCD	⑦ CCIR443	⑥ EDIT

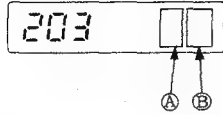
## Data content

❶CORRE OFF	H	Makes Y correlation pulses always LOW.	❷EDIT	H	Edit mode									
	L	Normal		L	Normal									
❸Yd	H	Causes Yd to be played back during PB.	❹CCIR443	H	Supports fsc=4.43 MHz									
	L	Normal		L	Supports fsc=3.58 MHz									
❺NCLP2	Changes the characteristics of the noise canceler during PB.		❻W CCD	H	Supports use of two CCD DLs during PB.									
❻NCLP1				L	Supports use of one CCD DL during PB.									
❼NCL2			❼Discahrge	H	Discharges the external clamping capacitor connected to pins ❸❷ and ❸❹.									
❼NCL1				L	Normal									
❷CFL2	PB Y PB Y Comb Filter Depth standard value (low range input minute level)		❸Video AGC	H	Video AGC ON									
❸CFL1				L	Video AGC OFF									
	<table><tr><td>CFL2 \ CFL1</td><td>H</td><td>L</td></tr><tr><td>H</td><td>-10dB</td><td>-6dB</td></tr><tr><td>L</td><td>-1.5dB</td><td>0dB</td></tr></table>		CFL2 \ CFL1	H	L	H	-10dB	-6dB	L	-1.5dB	0dB	❹INSEL	H	VIN2 input during REC at pin ❸❹.
	CFL2 \ CFL1	H	L											
H	-10dB	-6dB												
L	-1.5dB	0dB												
		L	VIN1 input during REC at pin ❸❷											
❹E	H	Supports the Hi8 mode.	❺S	H	Supports separation signals during REC.									
	L	Supports the normal mode.		L	Supports composite signals during REC.									
❶Camera REC	H	Camera recording mode	❶PB	H	PB (playback) mode									
	L	Video recording mode		L	REC (recording) mode									
❶DOC OFF	H	Does not perform dropout compensation (D.O.C.).	H=1 L=0											
	L	Normal												

# Address map (7) (Menu 203)

This menu can be used instead of menu 505 to check the details of abnormalities instantly.

LCD display



A				B			
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
1	1	1	1	1	1	1	1
8	7	6	5	4	3	2	1
5 : NO EMERGENCY FLAG 6 : CHANGE EMERGENCY CODE FLAG 7 : AGING MODE 8 : NOT USED				1 : F. MODE=STOP EMERGENCY #1 2 : BATTERY END 3 : TAPE END 4 : FUNCTION MODE=STOP EMERGENCY a			

## 1-14. FP-40/40P Board Self Diagnosis

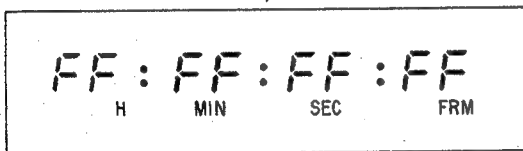
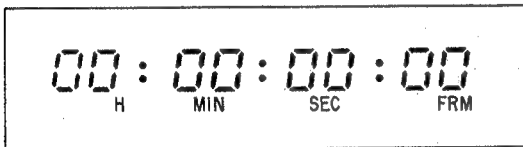
The EVW-300/300P has a self diagnostic function which judges whether the switches and LCD display on the FP-40/40P board are functioning correctly.

### Operation method

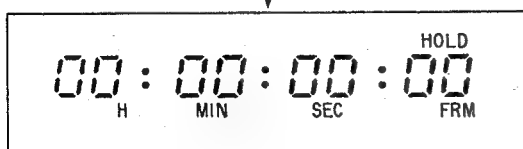
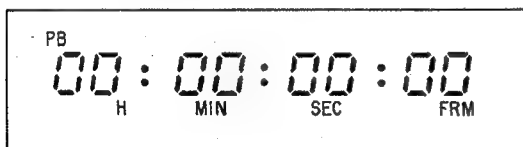
1. Connect TP501 and GND (E1) on the FP-40/40P board with a shorting clip.
2. Install the side plate (right) assembly on the unit, and switch the power ON. (The unit will enter the self-diagnostic mode.)
3. Check the LCD display visually.

(LCD screen)

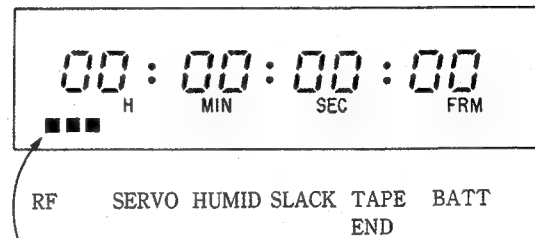
- The time code will be displayed in sequence from 0 to F.



- Characters are displayed in the sequence PB → VITC → NDF → SLAVE → 2FLD → HOLD.



- The warning cursor corresponding to the display at the bottom of the LCD display (RF, SERVO, HUMID, SLACK, TAPE END, BATT) flashes in sequence from the left.



The cursor corresponding to each display moves progressively from the left.

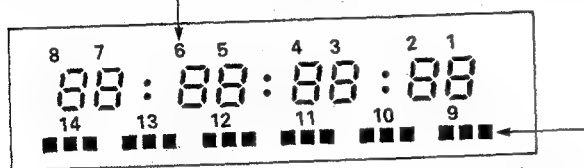
- The WARNING lamp will light.

- The LCD display changes from all lit → all out → all lit, then self diagnosis of each switch starts.



4. If the indication of the LCD display corresponding to each switch changes when a switch on the operation panel is operated, that switch is functioning correctly. The relation between each switch and the state of the LCD display is shown in the table below.

e.g. Changes from 0 to 1 with SHIFT button pressed



e.g. This cursor flashes with DISPLAY switch turned on

No.	Diagnostic item	Item that can be confirmed
1	F-RUN key	
2	R-RUN key	
3	TC/U-BIT switch	
4	Not used	
5	ADVANCE button	
6	SHIFT button	
7	REGEN/RESET switch	
8	COUNTER RESET button	AVTEST (EE switchover)
9	DISPLAY switch	AUDIO MUTE
10	DF/NDF switch	WARNING LAMP
11	TEST	VAPB MODE
12	RF SWP	EJECT button
13	REMOTE REC	SP/LP
14	Not used	

## 1-15. BATTERY END/NEAR END VOLTAGE SETTING

It is necessary to set the BATTERY END/NEAR END voltages after replacing the SS-50/50P board or replacing IC108 on the SS-50/50P board.

According to use, the desired voltage can be set within the settable range.

Settable range : 7.5 V to 12.5 V

Settable unit : 0.02 V

Factory settings: Battery end voltage 10.98 V

Battery near end voltage 11.30 V

Equipment required : DC power supply, digital voltmeter

1. Connect the DC power supply to the unit. (Fig. 1)
2. Connect TP502 and GND (E1) on the FP-40/40P board with a shorting clip.
3. Load a blank tape, then press the [VTR] button on the front panel to enter the REC mode.
4. Refer to section 1-10, then select menu "503" when performing the battery end voltage setting, or menu "504" when performing the battery near end voltage setting.
5. Set the [R-RUN/SET/F-RUN] switch to the R-RUN position.
6. Place the ends of the leads of the digital voltmeter on the pins of the DC IN connector, as shown in the Fig. 2, then adjust the DC power supply until the desired voltage is obtained.

**Note:** Take great care that the leads do not touch any other pins.

7. Press the [COUNTER RESET] button.  
(The LCD display will be out while the set value is being written to the ROM.)
8. Stop the REC mode.
9. Set the [SELF DIAG] switch to OFF, then turn the power OFF momentarily.

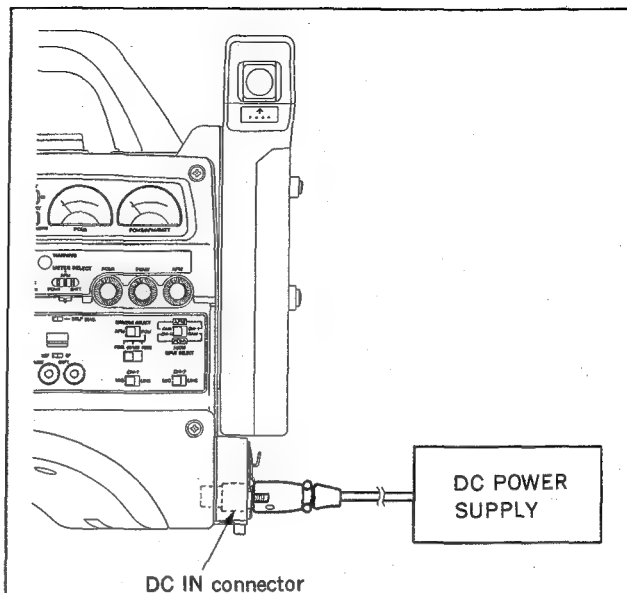


Fig. 1

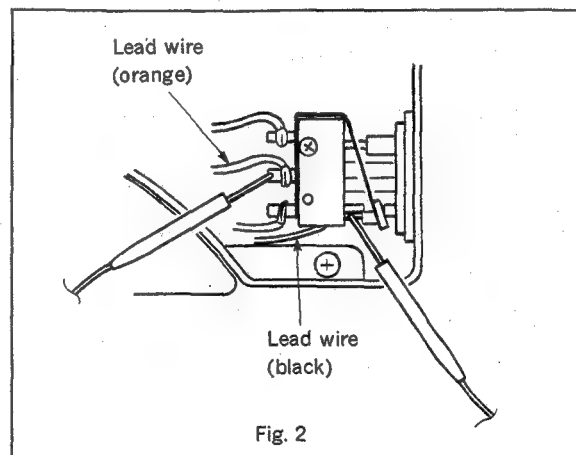


Fig. 2

## 1-16. REC PAUSE POSITION ADJUSTMENT

You can use the SELF DIAG mode to adjust the REC PAUSE position if picture disturbance occurs at back space edit position of the played-back picture. Perform this adjustment only when picture disturbance is noticeable. Do not perform the adjustment during normal servicing.

1. Connect TP502 and GND (E1) on the FP-40/40P board with a shorting clip.
2. Select menu "204" according to section 1-10.
3. Set the [R-RUN/SET/F-RUN] switch to the [R-RUN] position, then vary the data.

Variable range: E0~E8~F0~F8~00

Factory setting: F0

4. Load a blank tape, then press [VTR] on the front panel to enter the REC mode. Pressing the [VTR] button once again will cause the unit to pause.  
Repeat this operation several times, waiting for at least 10 seconds between each operation.
5. Review the recording, and check the back space edit point with the monitor.
6. Repeat steps 3 to 5, and change the data in menu "204" so that the skew becomes minimum.
7. Press the [COUNTER RESET] button.  
(The LCD display will be out while the set value is being written to the ROM.)
8. Set the [SELF DIAG] switch to OFF, then turn off the power momentarily.

## 1-17. NOTE ON SS-50/50P REPLACEMENT

It is necessary to perform the following settings after replacing the SS-50/50P board, or replacing the IC108 on the SS-50/50P board. For details, refer to section 1-13.

1. Select menu "501" and select data "11" to set the default values of the battery end/near end voltage, lithium battery end voltage and switching position.
2. Select menu "503" and set the battery end voltage.
3. Select menu "504" and set the battery near end voltage.
4. Select menu "101" and perform the switching position adjustment.

## 1-18. BOARD SWITCH SETTINGS

### ES-4/4P board

#### • S1 (VTR TEST)

Switch over the Y signal output to the VTR.

Up: The Y signal will be output.

Down: The VBS signal will be output.

The factory setting is the up position.

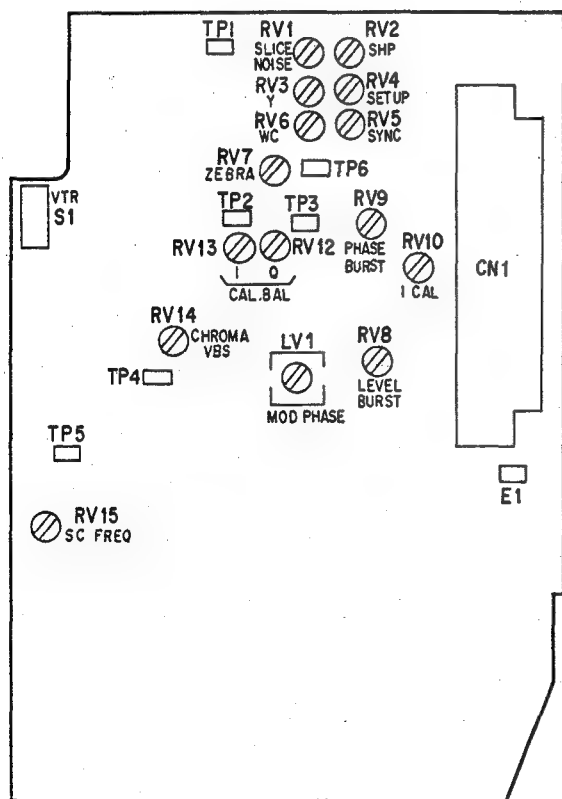
### IE-33 board

#### • S1 (75% CB/100% CB) (NTSC only)

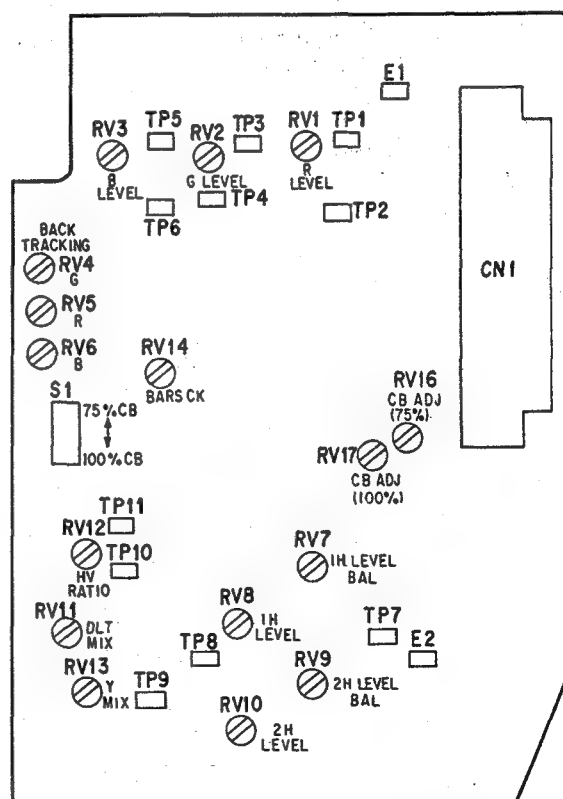
Up: White level 77% color bar signals are output.

Down: White level 100% color signals are output.

The factory setting is 75% CB (up position).



ES-4 BOARD (COMPONENT SIDE)



IE-33 BOARD (COMPONENT SIDE)

## AT-70 board

### ● S1 (FRAME RESET/FIELD)

The CCD readout method can be set to either frame reset readout (EVS) or field readout.

The factory setting is FLD (up position).

### ● S2 (FULL FUNCTION/OPE)

Up (OPE) : Normal mode

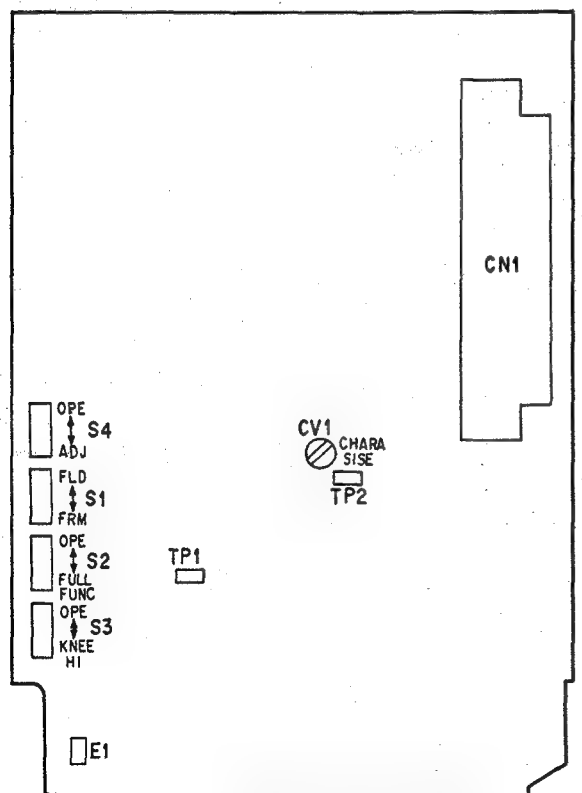
Down (FULL FUNCTION) :

In addition to the normal mode, the following modes can be varied.

- Control setting of the video system (\* 1)
- Auto iris setting (\* 2)
- Gain, clear scan setting (\* 3)
- AGC, AE speed select setting (\* 4)

By setting this switch to the [FULL FUNC] side in the case of an AUTO WHITE or AUTO BLACK error, the details of the error can be seen. (\* 5)

The factory setting is OPE (up position).

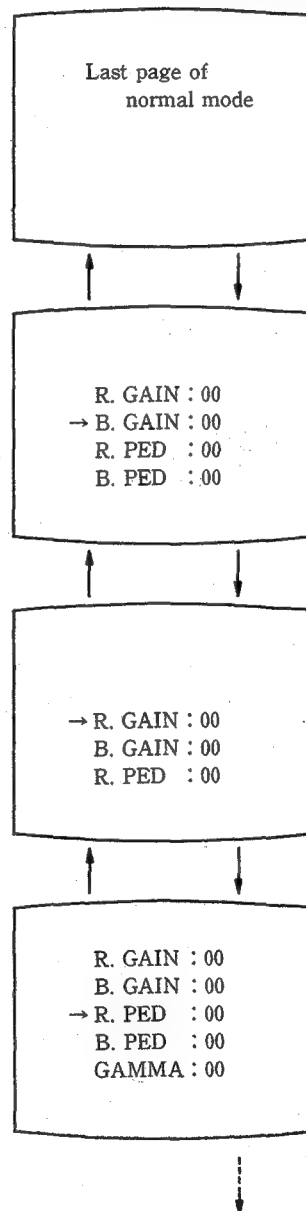


AT-70 BOARD (COMPONENT SIDE)

### \* 1 Changing the control setting mode of the video system

- 1) Set S4 of the AT-70 board to [OPE] (up position), and S2 to [FULL FUNC] (down position).
- 2) By setting the [DISP CHG] switch on the side of the unit, the following screen will be displayed on the VF screen after the normal control mode.

↓ : Push down the [DISP CHG] switch.  
↑ : Push up the [DISP CHG] switch.



(To the auto iris setting mode)

From this screen, the control voltage corresponding to the item indicated by the flashing arrow [→] can be varied using the [UP] or [DOWN] switch on the front of the unit.

Standard setting: 00

Variable range: 0 V~2.5 V~5.0 V  
(display -99~00~99)

Display	Control item	Voltage change point	Memory	Renewal of set data
R GAIN	R gain	PR-159/159P board; pin 7 of IC13	×	The data will be renewed in the AUTO WHITE mode.
B GAIN	B gain	PR-159/159P board; pin 5 of IC13	×	
R PED	R pedstal	PR-159/159P board; pin 8 of IC13	○	The data will be renewed in the AUTO BLACK mode.
B PED	B pedstal	PR-159/159P board; pin 12 of IC13	○	
GAMMA	gamma	PR-159/159P board; pin 2 of IC13	○	
KNEE	knee point	PR-159/159P board; pin 3 of IC13	○	
W. CLIP	white clip	PR-159/159P board; pin 4 of IC13	○	
CRISP A	aperture crispening	AT-70 board; pin 3 of IC13	○	
CRISP D	detail crispening	PR-159/159P board; pin 19 of IC13	×	The data will be renewed with the [GAIN] switch.
P KNEE	pre-knee point	PR-159/159P board; pin 6 of IC13	○	

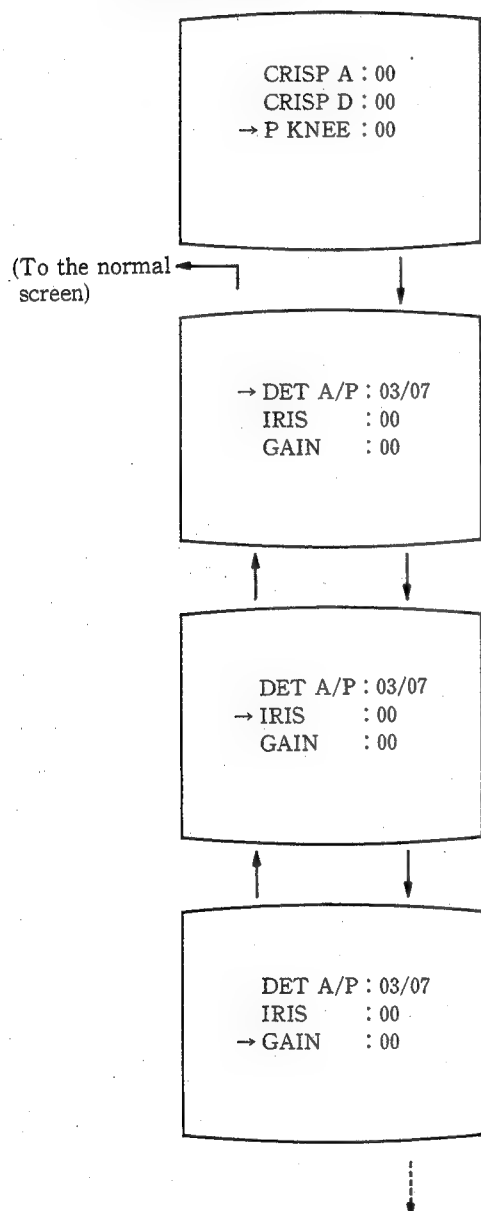
Return to the standard setting of 00 after changing the control voltage.

\* 2 Changing the auto iris setting mode

↓ : Press down the [DISP CHG] switch.

↑ : Press up the [DISP CHG] switch.

Change the data with the [UP] switch or the [DOWN] switch.



Last page of the video system control mode

The AVERAGE/PEAK ratio of the AUTO IRIS, AGC and AE level detection can be changed.

Standard setting : 03/07

Setting of AUTO IRIS, AGC and AE convergence level

AUTO IRIS loop gain setting

Standard setting : 00

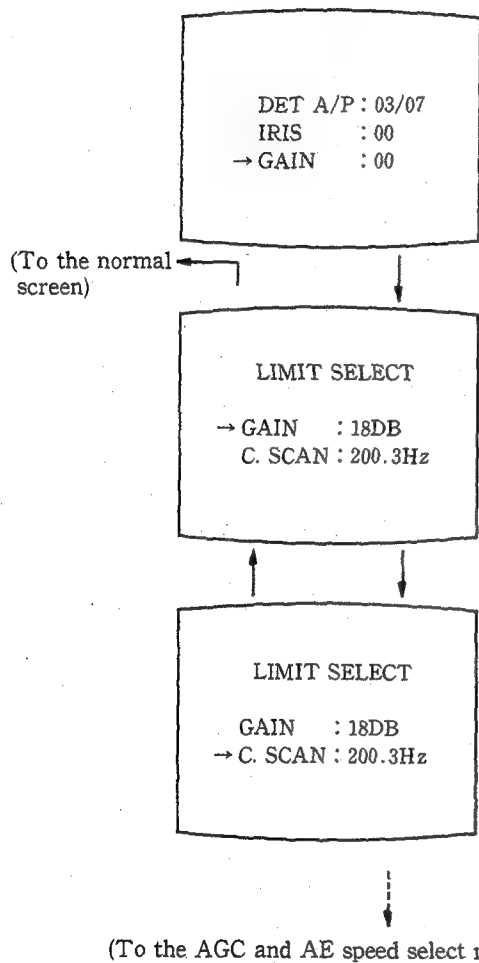
**Note :** If the gain is increased excessively, the iris may hunt when a bright subject is shot.

\* 3 Changing the gain and clear scan setting modes

↓ : Press down the [DISP CHG] switch.

↑ : Press up the [DISP CHG] switch.

Change the data with the [UP] switch or the [DOWN] switch.



Last page of the auto iris setting mode

The upper limit of the gain which can be set with the [GAIN] switch on the side of the unit can be varied.

Variable range : 2 dB to 24 dB (1 dB steps)

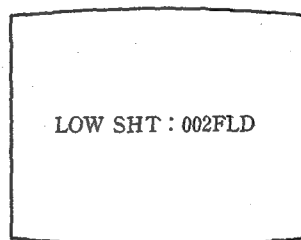
Standard setting : 18 dB

The upper limit of the frequency which can be set using a clear scan function can be varied.

Variable range : 59.9 to 10169 Hz

Standard setting : 200.3 Hz

- You can enter the low speed shutter mode by pressing the [UP] switch while the screen shown at left is displayed.



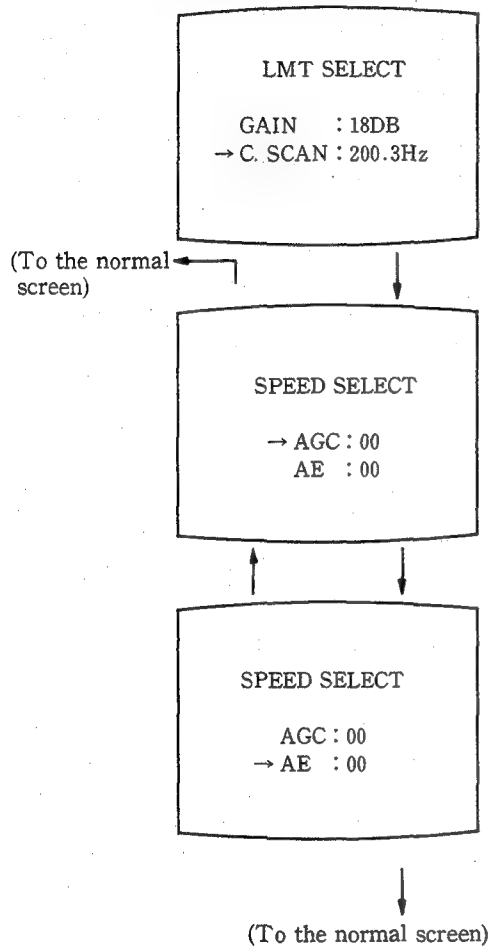
Variable range : 002FLD to 510FLD  
(2FLD steps)



\* 4 Changing the AGC and AE speed select setting modes

↓ : Press down the [DISP CHG] switch.

↑ : Press up the [DISP CHG] switch.



Last page of the gain and clear scan setting modes

AGC speed (loop gain) setting

By increasing the value, the loop gain will rise.

Variable range : -99~00~99

Standard setting : 00

AE speed (loop gain) setting

By increasing the value, the loop gain will rise.

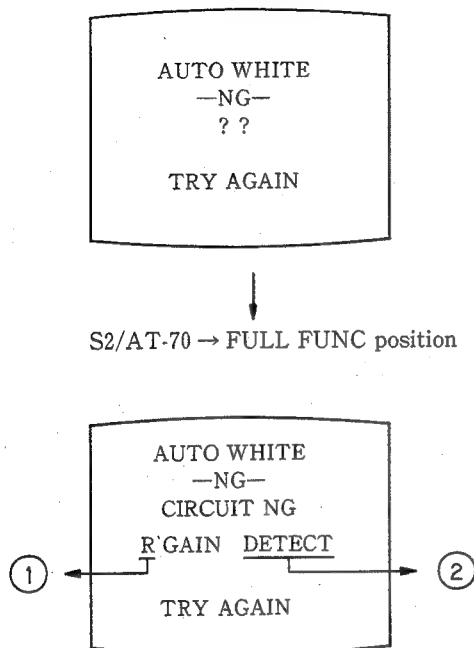
Variable range : -99~00~99

Standard setting : 00

**Note :** If the loop gain of AGC and AE is increased excessively, the AGC may hunt when a bright subject is shot.

\* 5 AUTO WHITE and AUTO BLACK error messages

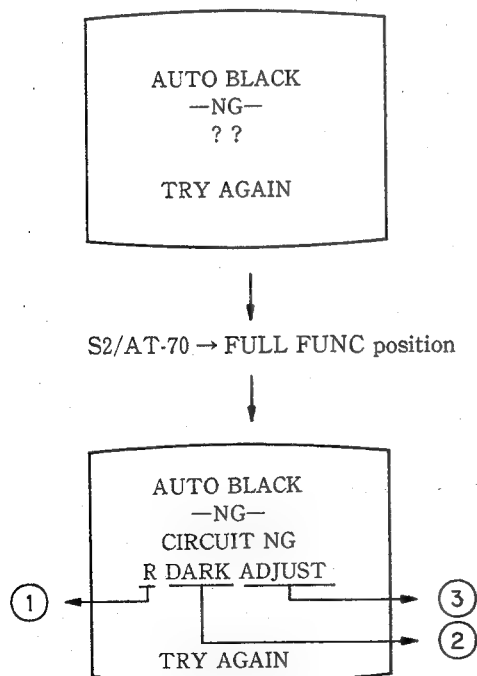
• AUTO WHITE error message



Error display when there is a defect in the circuit (normal mode)

- ① R : R-ch error
- B : B-ch error
- G-G : G-G reference voltage A/D error
- ② CONTROL : Control circuit error  
(Microprocessor → D/A converter → Each video circuit)
- DETECT : Detection circuit error  
(PR output → Detection circuit in AT board → Microprocessor)

• AUTO BLACK error message



Error message when there is a defect in the circuit (normal mode)

- ① R : R-ch error
- G : G-ch error
- B : B-ch error
- G-G : G-G reference voltage A/D error
- ② DARK : DARK CONT (black tracking) error
- PED : PED CONT (black balance) error
- ③ ADJUST : Outside the adjustment range
- CONTROL : Control circuit error  
(Microprocessor → D/A converter → Each video circuit)
- DETECT : Detection circuit error  
(PR output → Detection circuit in AT board → Microprocessor)

**Note :** Return S2/AT-70 to OPE position after using this mode.

• S3 (OPE → KNEE HI)

Up (OPE) : Normal mode

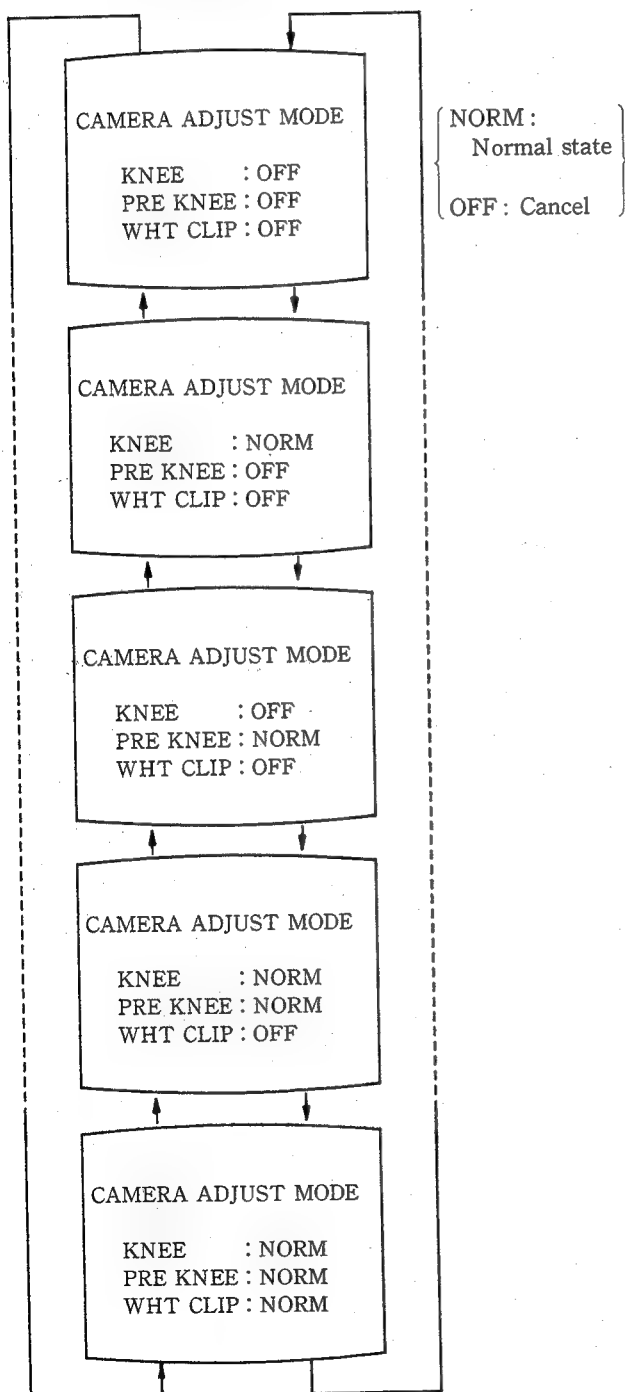
Down (KNEE HI) : Mode which clears the KNEE, PRE KNEE and WHITE CLIP in the ADJ MODE

The factory setting is OPE (up position).

- 1) Set S4 on the AT-70 board to ADJ (bottom position), and S3 to KNEE HI (bottom position).
- 2) Cancel KNEE, PRE KNEE and WHITE CLIP using the [UP] switch or the [DOWN] switch.

↓ : Press the [UP] switch.

↑ : Press the [DOWN] switch.



• S4 (ADJ/OPE)

Up (OPE) : Normal mode

Down (ADJ) : Control data of the following items is preset.

R/B GAIN,  
R/B PEDESTAL,  
MASTER PEDESTAL,  
DETAIL

The memory data can be cleared by using this switch (\* 6).

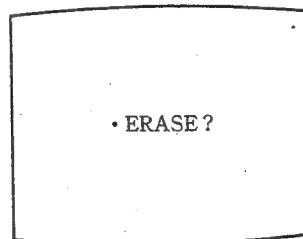
The factory setting is OPE (up position).

- \* 6 The following data memorized in the unit can be changed back to the factory settings.

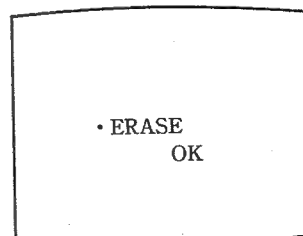
- AUTO WHITE data
- AUTO BLACK data
- The following data set using the [UP]/[DOWN] switch

AUTO IRIS OVERRIDE  
DETAIL  
MASTER PEDESTAL  
SHUTTER, CLEAR SCAN  
AE ON/OFF  
LOW LIGHT IND ON/OFF  
AUTO IRIS mode  
SHUTTER display mode  
GAIN UP switch select  
Changeover point between AGC • AE and  
AUTO IRIS

- 1) Set S4 on the AT-70 board to ADJ (bottom position).
- 2) Press down the [DISP CHG] switch.



- 3) By pressing the [UP] switch, the entire contents of the memory will be erased.



- 4) Finally, be sure to return S4 on the AT-70 board to OPE (up position).

# VO-43/43P board

## • S801 (CHROMA MUTE)

Left (OPE): Normal mode

Right (CHROMA MUTE): The chroma signal is muted.

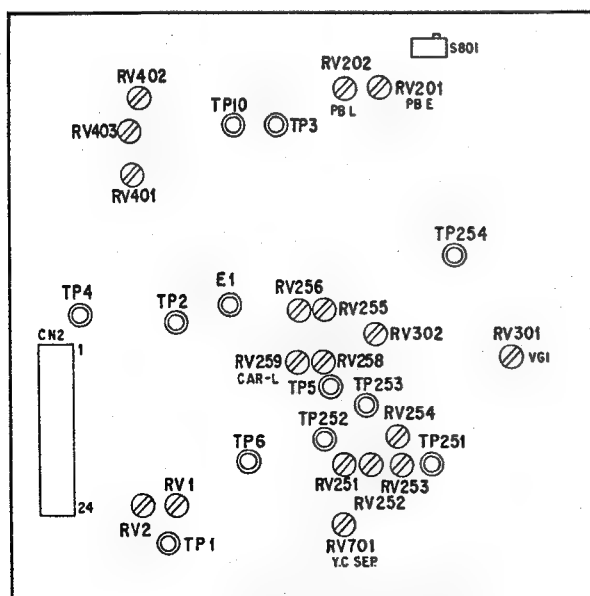
Set this switch to CHROMA MUTE (right side) during  
Y/C SEP adjustment or IR adjustment.

The factory setting is OPE (left side).

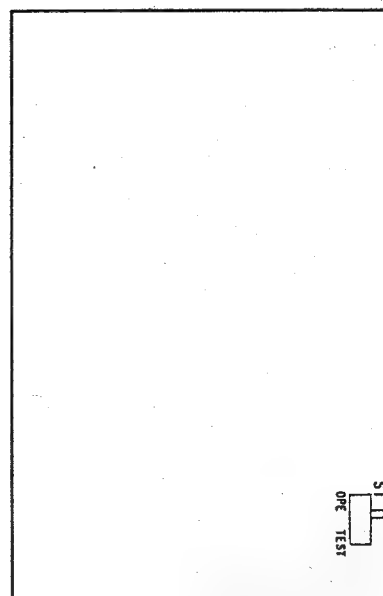
# MB-381/381P board

## • S1 (TEST/OPE)

This switch is not used. Set it to the OPE (up position).



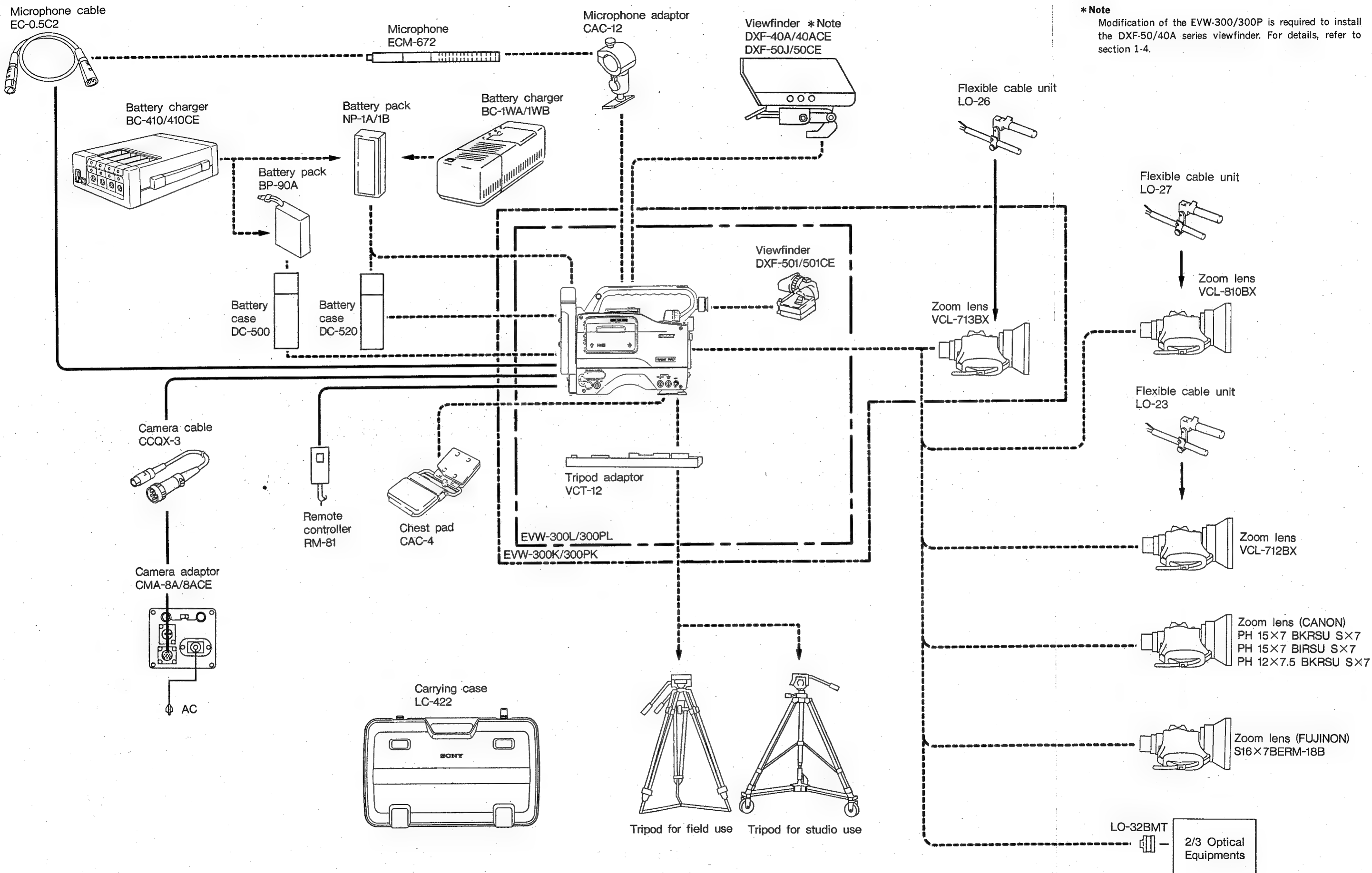
VO-43 BOARD (COMPONENT SIDE)



MB-381 BOARD (COMPONENT SIDE)

# 1-19. SYSTEM CONFIGURATION

Microphone cable  
EC-0.5C2



Microphone adaptor  
MAC-12

Viewfinder \* Note  
DXF-40A/40ACE  
DXF-50J/50CE

**\* Note**

Modification of the EVW-300/300P is required to install the DXF-50/40A series viewfinder. For details, refer to section 1-4.

Flexible cable unit  
LO-26

Flexible cable unit  
LO-27

Zoom lens  
VCL-810BX

Zoom lens  
VCL-713BX

Flexible cable unit  
LO-23

Zoom lens  
VCL-712BX

Zoom lens (CANON)  
PH 15×7 BKRSU S×7  
PH 15×7 BIRSU S×7  
PH 12×7.5 BKRSU S×7

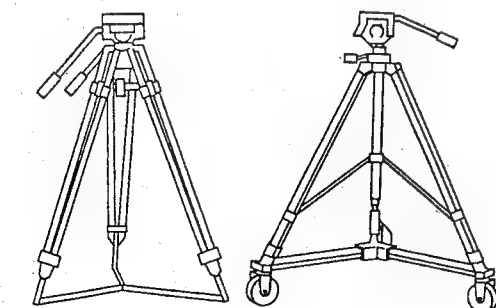
Zoom lens (FUJINON)  
S16×7BERM-18B

LO-32BMT

2/3 Optical  
Equipments

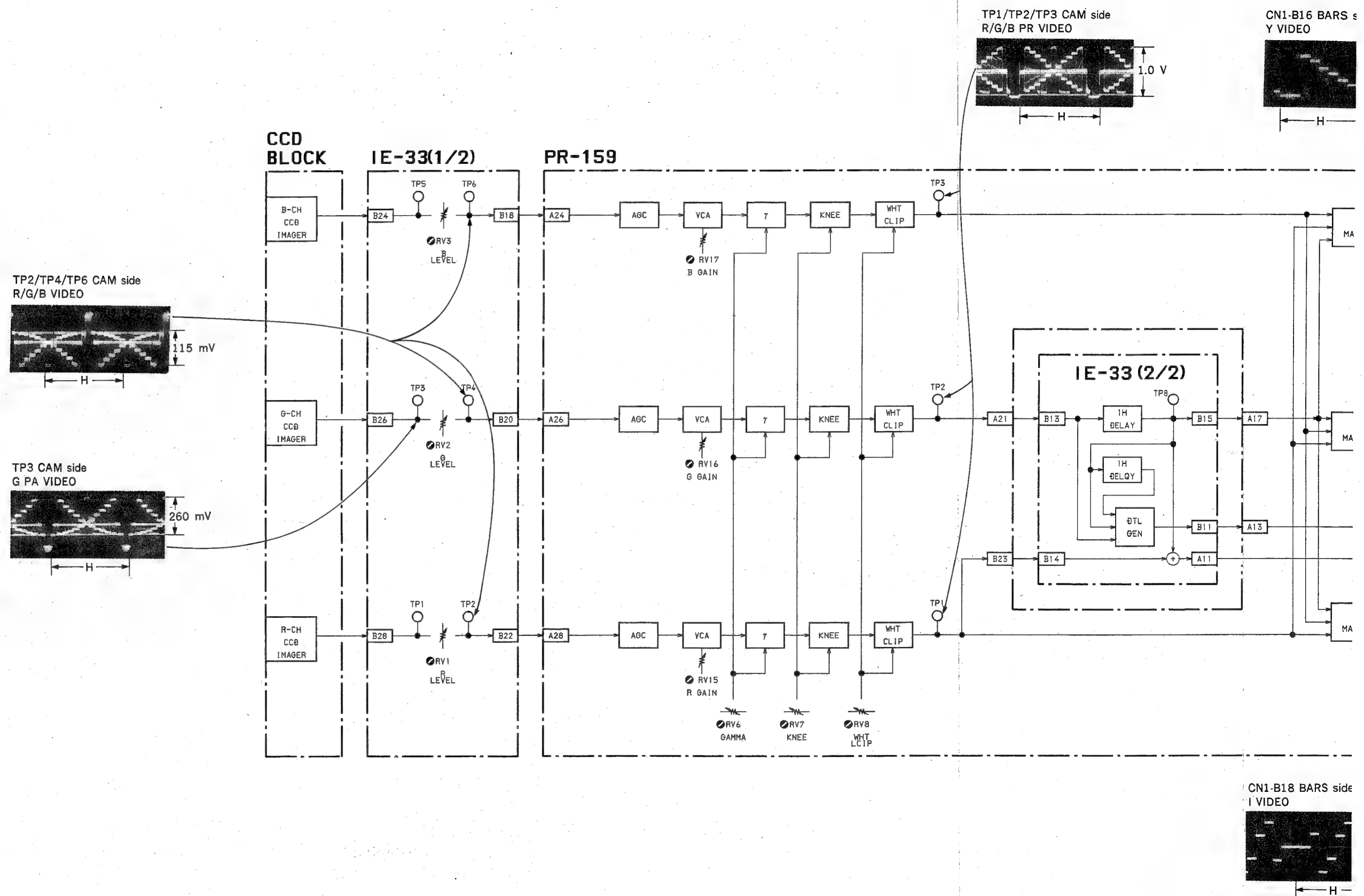
Audio adaptor  
MAC-12

Video PL  
VCL



Tripod for field use Tripod for studio use

## 1-20. LEVEL CHECK SHEET

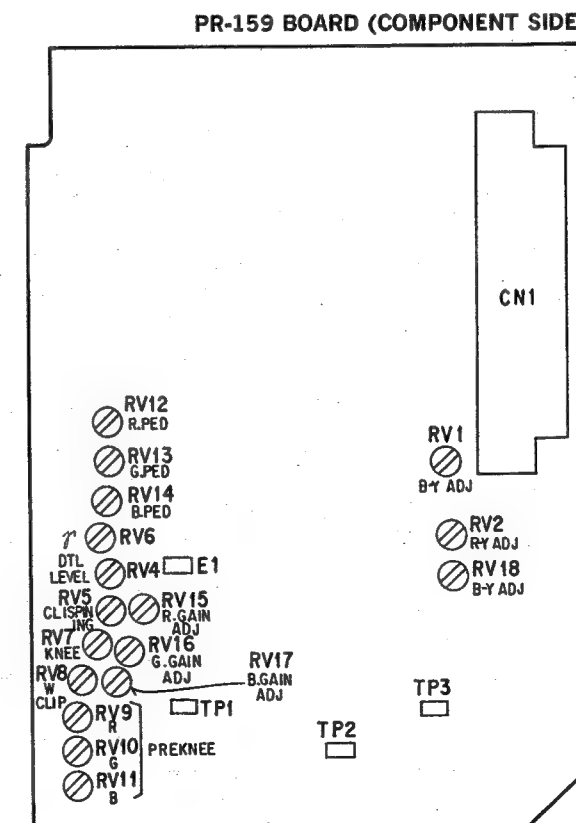
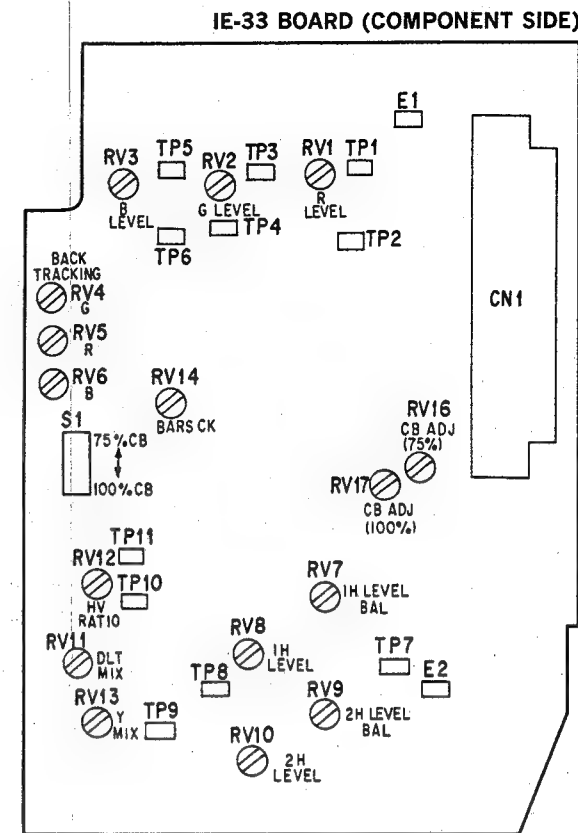
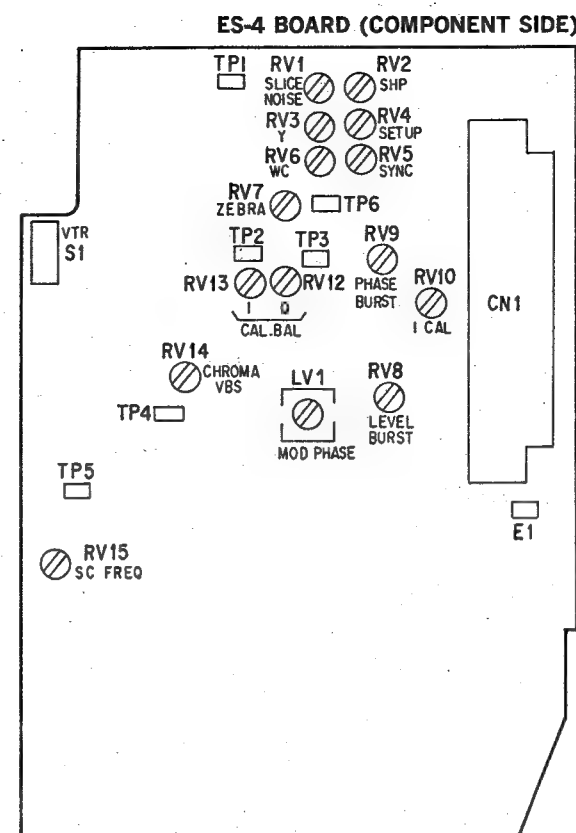






	Adjustment Item	Initial Setting	Test Point	Adj. Point	Specification	Remarks
Step 1	Carrier Balance	GAIN switch → 0dB OUTPUT switch → BARS	Vectorscope screen	RV12/ES-4 RV13/ES-4	Locate black beam spot in the center of screen	
Step 2	Color Bar 75%/100%		Pin A19/Extension board (IE-33)	RV16/IE-33 RV17/IE-33	0.75±0.01V 1.00±0.01V	S1/IE-33 → 75% S1/IE-33 → 100%
Step 3	Setup Level		Waveform monitor screen	RV4/ES-4	7.5±0.5 IRE	
Step 4	Gray Level			RV3/ES-4	77±2 IRE	
Step 5	SYNC Level			RV5/ES-4	40±2 IRE	
Step 6	CB Carrier leakage			RV1/PR-159 RV2/PR-159	Minimize white carrier leakage	
Step 7	Burst Level		Vectorscope screen	RV8/ES-4	Burst → 75% position	
Step 8	Burst Phase			RV9/ES-4 PHASE knob/ Vectorscope	Burst → 75% axis	
Step 9	Color Vector			LV1/ES-4 RV10/ES-4 RV14/ES-4	Locate beam spot of each color in the specified frame.	
Step 10	1H OUT balance	Object : Burst chart Lens iris →	TP8/IE-33	RV7/IE-33	Waveforms are not doubled.	
Step 11	2H OUT balance	0.5MHz LEVEL : 100 IRE	TP9/IE-33	RV9/IE-33		
Step 12	1H Gain	Object : Gray scale chart OUTPUT switch → CAM WHITE MODE switch → PRE Lens iris → VIDEO OUT LEVEL : 100 IRE	CH1 : TP7/IE-33 CH2 : TP8/IE-33	RV8/IE-33	Waveform is flat.	Set the gain for CH1 and CH2 to the same level. Set the GAIN ADD mode for CH1 and INVERT mode for CH2.
Step 13	2H Gain		CH1 : TP7/IE-33 CH2 : TP9/IE-33	RV10/IE-33	Waveform is flat.	Set the gain for CH1 and CH2 to the same level. Set the GAIN ADD mode for CH1 and INVERT mode for CH2.
Step 14	G/B/R input gain	Object : Gray scale chart Lens iris → Level at TP3/IE-33 : 260mV	TP4/IE-33 TP2/IE-33 TP6/IE-33	RV2/IE-33 RV1/IE-33 RV3/IE-33	White level : 115±5mV	
Step 15	G GAIN/GAMMA/PED	Lens iris → Level at A26/Extension board (PR-159) : 115mV	Pin B21/Extension board (PR-159)	RV13/PR-159 RV6/PR-159 RV16/PR-159	Pedestal level 25±2mV Cross point level 550±20mV White level : 1000±10mV	Cap the lens Uncap the lens See * 1
Step 16	R/B GAIN/PED	Lens iris → Leave the lens iris as it was set in step 15, and cap the lens.	Waveform monitor	RV12/PR-159 RV14/PR-159 RV15/PR-159 RV17/PR-159	Minimize the carrier leakage at pedestal level. Minimize the carrier leakage at white level.	Repeat the adjustments.
Step 17	G black set and pedestal	Close the lens iris  GAIN switch → 0dB	Pin B21/Extension board (PR-159)	RV5/IE-33  RV13/PR-159	Repeat the adjustments until the level does not change even if the gain switch is set to either 0dB or HIGH (18dB). Pedestal level 25±2mV	
Step 18	R/B black set and pedestal	Close the lens iris GAIN switch → HIGH (18dB) Close the lens iris GAIN switch → 0dB	Vectorscope screen GAIN : MAX	RV4/IE-33 RV6/IE-33 RV12/PR-159 RV14/PR-159	Locate black beam spot in the center of screen. Locate black beam spot in the center of screen.	Repeat the adjustments until the level does not change even if the gain switch is set to either 0dB or HIGH (18dB).
Step 19	Knee compensation	Lens iris → Pin B21/Extension board (PR-159) : 1020 +10 mV -0	Pin B21/Extension board (PR-159)	RV7/PR-159	White level : 1000 +0 mV -10	Object : Gray scale chart
Step 20	Pre-knee	Object : Gray scale chart Lens iris → Level at pin A26/Extension board (PR-159) : 350mV	Pin B21/Extension board (PR-159) Waveform monitor screen	RV10/PR-159 RV9/PR-159 RV11/PR-159	White level : 1150 +20 mV -0 Minimize the carrier leakage at level of up to the third step from the top	
Step 21	PR WHITE CLIP	GAIN switch → HIGH (18dB)	Pin B21/Extension board (PR-159)	RV8/PR-159	White level : 1150±10mV	Object : Gray scale chart
Step 22	ES WHITE CLIP	Lens iris → VIDEO OUT LEVEL : 110±2 IRE	Waveform monitor screen	RV6/ES-4	Maximum level 125 +0 IRE -2	Object : Burst chart GAIN switch → 0dB

\* 1: Align the pedestal, cross point, and white levels repeatedly.



## SECTION 2

### PERIODIC CHECK AND MAINTENANCE

The following periodic check and maintenance schedule are recommended to be performed in order to maintain performance and obtain longer life of the unit. The period of the check and maintenance refers to Hours Meter on Side Panel.

#### 2-1. MAINTENANCE AFTER REPAIRS

Perform the following maintenance after repairs without regarding operational hours of the unit.

##### 2-1-1. Cleaning of Rotary Upper Drum

Press cleaning piece moistened with cleaning fluid lightly against Rotary Upper Drum and turn slowly Rotary Upper Drum counterclockwise by a hand.

**Note ;** Never turn it with electric power. Never turn it clockwise by a hand. When cleaning head chip, never move the cleaning piece in vertical direction. It is possible to damage the head chip.

##### 2-1-2. Cleaning of Tape Path System

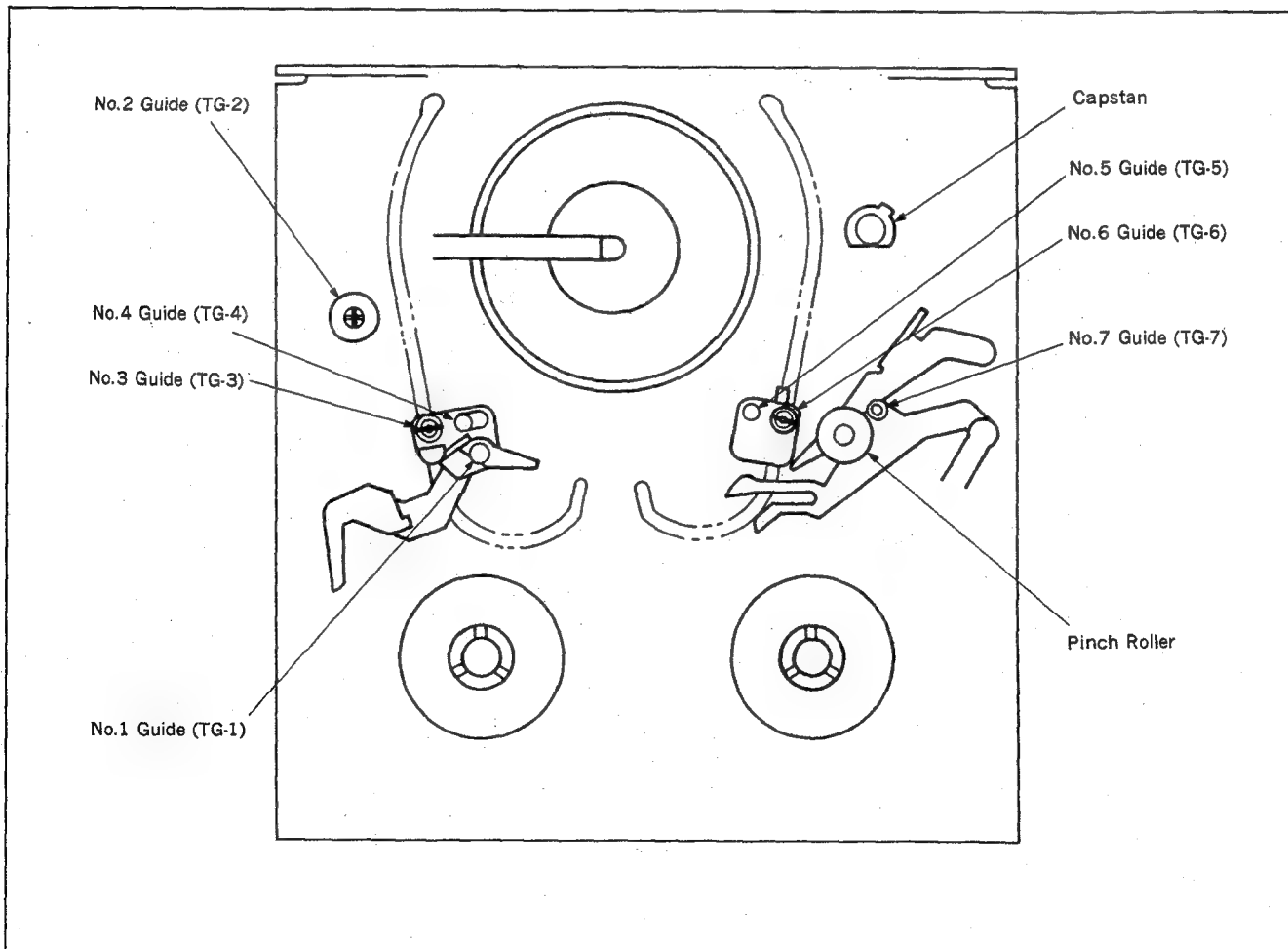
Put Cassette-up Compartment Assembly into the EJECT mode. Clean tape path system as No. 1 thru. No. 11 Guides, Drum, Capstan Shaft, and Pinch Roller with the cleaning piece moistened with cleaning fluid.

##### 2-1-3. Cleaning of Drive System

Clean drive system as Reel Table surface and belt with the cleaning piece moistened with cleaning fluid.

#### 2-2. PERIODIC CHECK

Perform periodic check and maintenance according to operational hours of the unit.



## 2-3. HOURS METER

Hours Meter can be displayed the total rotation time of the Upper Drum Assembly on the LCD display on the Side Panel. It is recommended that the Hours Meter is used as a tool for determining the periodic check.

## Operation Procedures

1. Set the [DISPLAY] switch on the Side Panel to [TC] position.
2. Set the [R-RUN/SET/F-RUN] switch to [F-RUN] position.
3. Set the [TC/U-BIT] switch to [U-BIT] position.
4. The total rotation time of the Upper Drum Assembly is displayed while pressing the [SHIFT] button.

○ : Cleaning ◆ : Replacement ◇ : Check ■ : Apply oil □ : Smear grease

Location			Hours of Use (H) : Hour of Drum Rotation										Reference Section
	Part Name	Part No.	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Tape Path	Tape Path surface	—	○	○	○	○	○	○	○	○	○	○	2-1.
	Upper Drum Assembly (DGR-66-R)	A-7049-312-A	○	◆	○	◆	○	◆	○	◆	○	◆	3-15.
	Lower Drum Assembly (DGR-66A-R)	A-7048-362-A	○	○	○	○	○	◆	○	○	○	○	3-15.
	Pinch Roller Assembly	A-7040-219-A	○	○	○	○	○	◆	○	○	○	○	3-8.
	(*1) Coaster (Left) Assembly	A-7040-204-A				□				□			2-4. 3-21.
	(*1) Coaster (Right) Assembly	A-7040-216-A				□				□			2-4. 3-20.
	(*2) Capstan Motor	8-835-331-31		■		■		◆		■		■	2-5. 3-3.
Drive System	Loading Motor	A-7040-208-A						◆					3-22.
	(*2) Joint Gear Assembly	X-3726-805-1				■				■			2-5. 3-17.
	TS Brake Assembly	X-3726-808-3				◆				◆			3-18.
	Tension Regulator Band Assembly	X-3728-859-1				◆				◆			3-12.
	(*2) Relay Pulley Assembly	X-3726-813-4				■				■			2-5. 3-18.
	(*1) (*2) Drive Gear (Left) Assembly	X-3728-842-1				□/■				□/■			2-4. 2-5. 3-21.
	(*1) (*2) Drive Gear (Right) Assembly	X-3728-843-1				□/■				□/■			2-4. 2-5. 3-20.
	S Reel Table Assembly	X-3728-851-1	○	○	○	○	○	◆	○	○	○	○	3-10.
	T Reel Table Assembly	X-3728-855-6	○	○	○	○	○	◆	○	○	○	○	3-11.
	(*2) RC Gear Assembly	X-3728-858-2				■				■			2-5. 3-17.
	(*1) Worm Assembly	X-3940-276-2				□				□			2-4. 3-22.
	Timing Belt (S)	3-728-866-11				◆				◆			3-17.
	Timing Belt (L)	3-741-197-01				◆				◆			3-17.
	(*1) Groove of Coaster Guide	—				□				□			2-5.
Performance Check	Abnormal-noise	—	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	—
	FWD Back Tension Measurement	—		◇		◇		◇		◇		◇	4-1.
	FWD, RVS Torque Measurement	—		◇		◇		◇		◇		◇	4-2.

(\*1) Smear a grease referring to Section 2-4.

(\*2) Apply oil referring to Section 2-5.

(\*3) When overhauling, replace part referring to the list.

(\*4) Replacement of part will be influenced by operating surroundings.

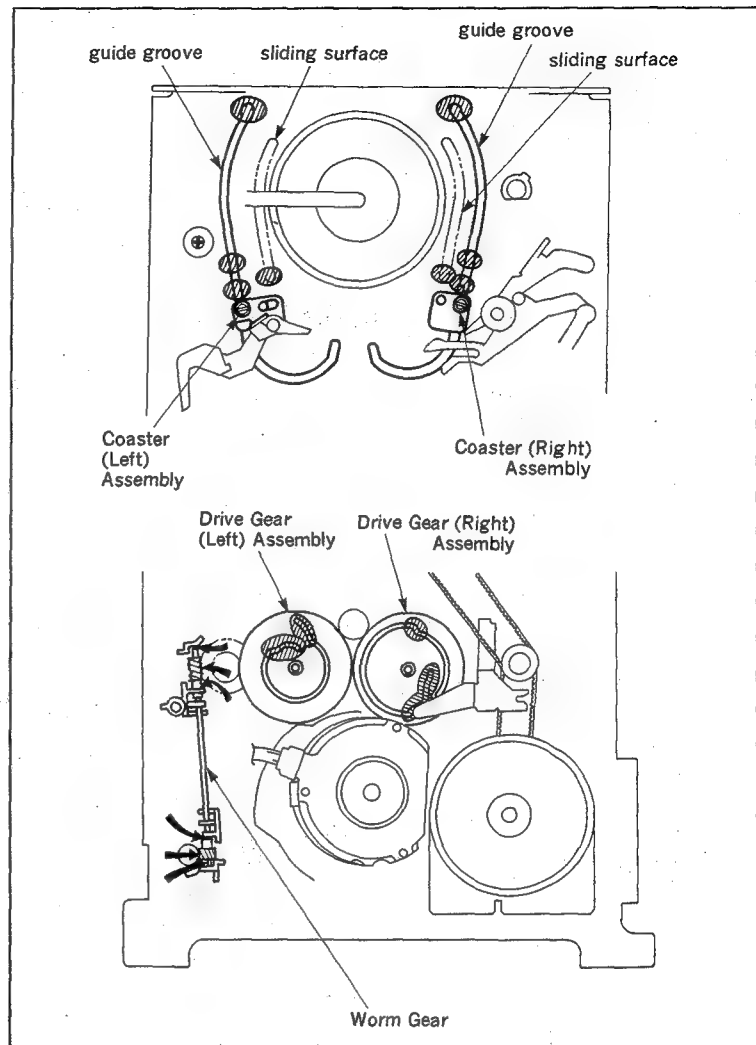
(\*5) When repairing, be sure to clean Tape Path surface.

## 2-4. SMEAR GREASE

Smear a grease periodically to the following portions.

- Top projection of Coaster (Left) Assembly.
- Top projection of Coaster (Right) Assembly.
- Coaster Guide's groove of mechanical chassis.
- Sliding surface of the Coaster Guide on the mechanical chassis.
- Lever Drive's groove of Drive Gear (Left) Assembly.
- Lever Drive's groove of Drive Gear (Right) Assembly.
- Worm Gear of Worm Assembly.

Then smear a grease to the shaded portions and arrow portions.

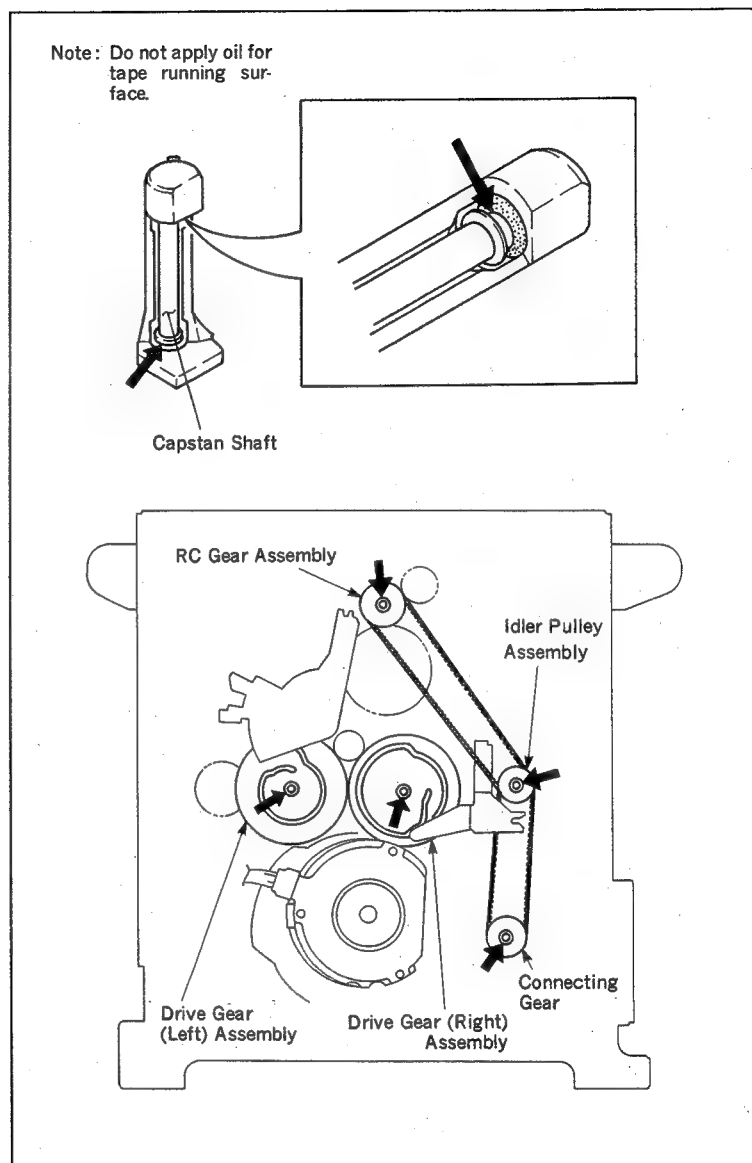


## 2-5. APPLY OIL

Apply oil periodically to the following portions.

- Capstan Shaft.
- Shaft of Drive Gear (Left) Assembly.
- Shaft of Drive Gear (Right) Assembly.
- Shaft of Idler Pulley Assembly.
- Shaft of RC Gear Assembly.
- Shaft of Connecting Gear Assembly.

Then apply a half drop of oil to the arrow portions.



## 2-6. HOW TO USE CLEANING TAPE

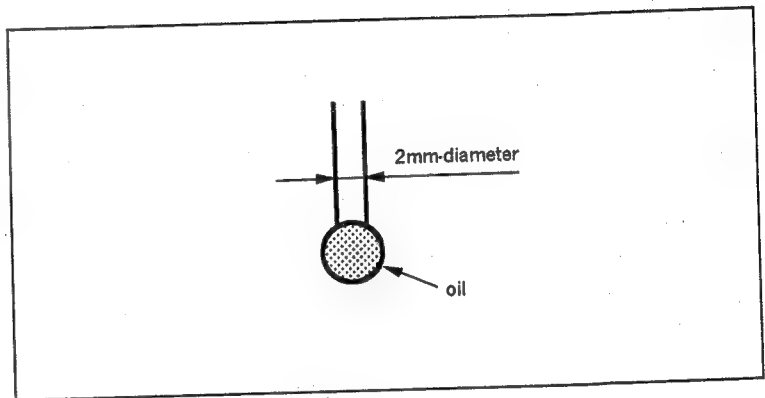
Cleaning tape : V8-6CLHSP  
(supplied accessory)  
V8-25CLH (option)

**Note :** Do not use cleaning tape, V8-25CLN.

- (1) When Rotary Head clogs and the head clogging cannot remove with head cleaning, use the cleaning tape. If using in other conditions, it will be shorten the life of the head.
- (2) Use within fifteen seconds for a cleaning and never rewind the cleaning tape for use. The cleaning tape can only once be used.

## 2-7. OTHERS

- (1) Sony oil
  - Be sure to use Sony oil. If other oil is used, it is possible to trouble because of different viscosity.  
Sony oil : Part No. 7-661-018-18
  - Use Sony oil in which dust and others are not mixed. If mixed, the bearing may seize or wear.
  - A drop of oil means the amount which sticks to a 2mm-diameter rod as shown in the figure.
- (2) Sony grease
  - Be sure to use Sony grease.  
Sony grease : Part No. 7-662-010-08  
(SGL-701)



## SECTION 3 REPLACEMENT OF MAJOR PART

### PREPARATION FOR REPLACEMENT OF PART

Replacement of some parts use a Mode Selector (Tool).   marked modes in the replacement procedure are set by pressing button on the Mode Selector. Install a Mode Selector III Panel on the Mode Selector and then use it.

Mode Selector: J-6080-825-A

Mode Selector III Panel: J-6082-023-A

#### Operation of Mode Selector

1. Location of part and control (Fig. 1)
2. Connection (Fig. 2)
  - (1) Install the Mode Selector III Panel on the Mode Selector.
  - (2) Connect the Mode Selector III Conversion Connector to the 6P connector (white) of the Mode Selector M-switch.
  - (3) Remove the Mechanical Deck Block referring to Section 1-2-1.
  - (4) Install the FP-89 Board to the Mode Selector III Conversion Connector.
  - (5) Touch the clips (black, red) of the Mode Selector III to terminals of the Loading Motor.

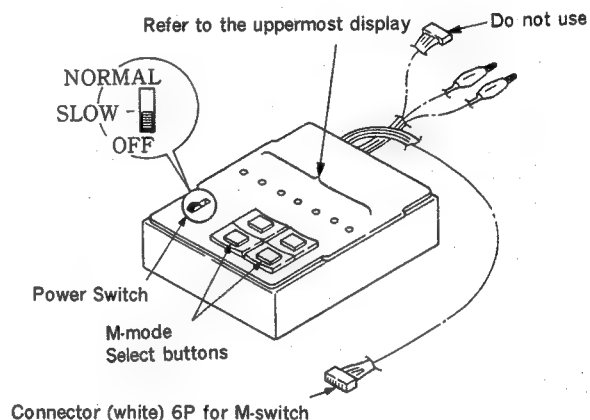


Fig. 1

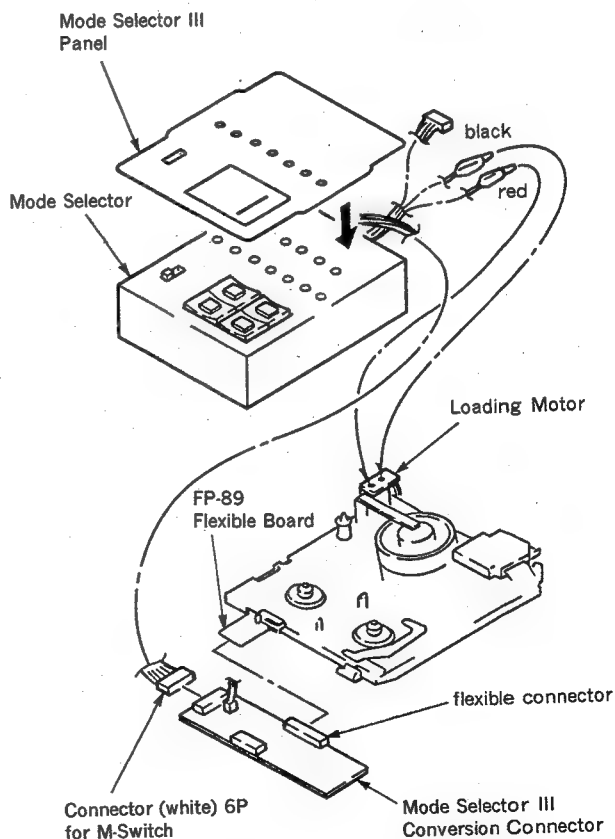
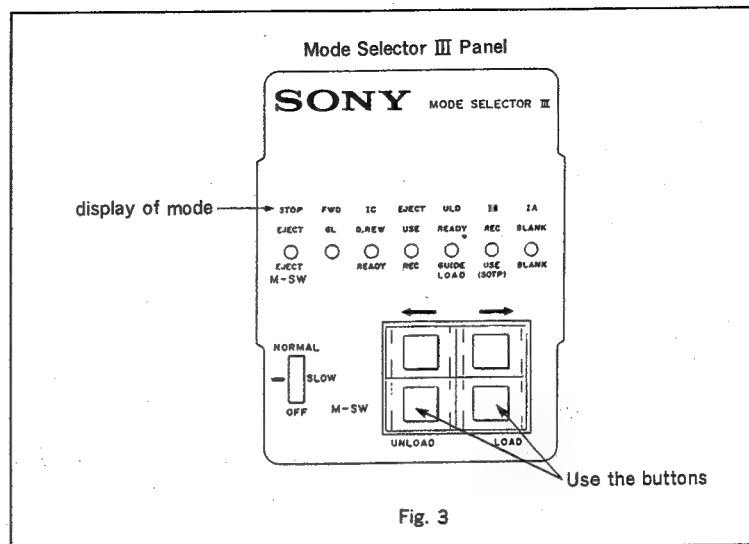


Fig. 2

### 3. Operation (Fig. 3)

- Use only M-mode select buttons.
- Refer to the uppermost display on the Mode Selector III Panel about display of the mode. The display of IA, IB and IC light up during the mode changes.
- Press continuously the right side M-mode select button and the mode changes the EJECT, (IA), ULD, (IB), STOP, (IC) and FWD in order.
- Press the left side M-mode select button, mode changes from FWD to EJECT in order.



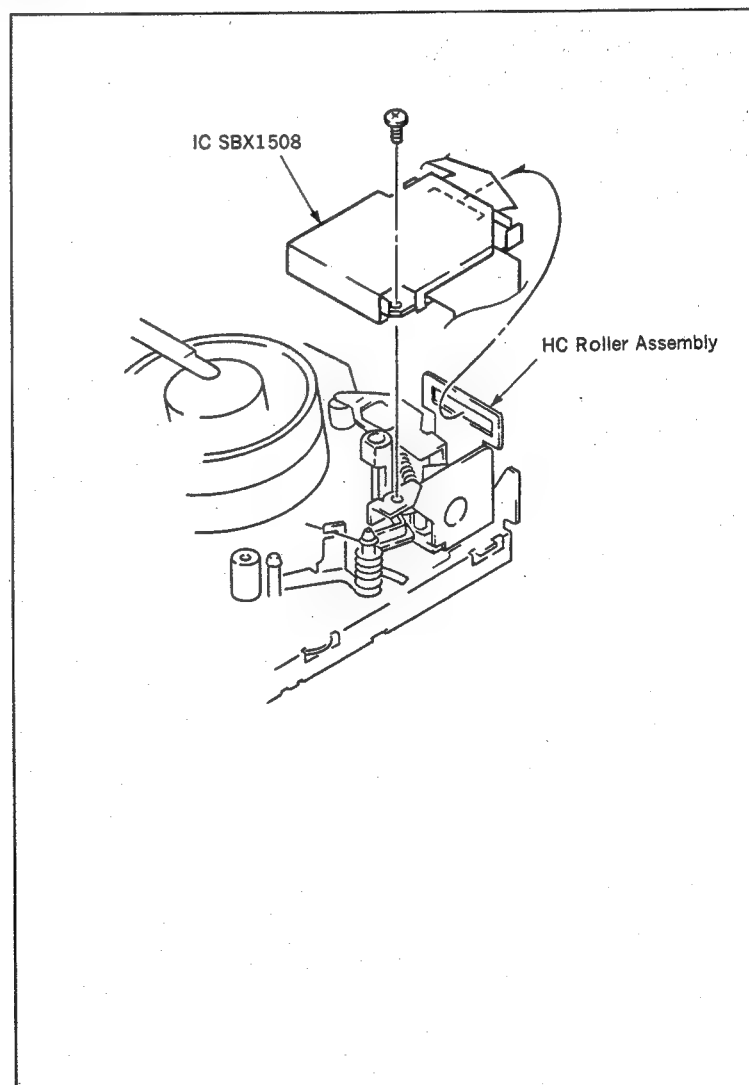
## 3-1. REPLACEMENT OF HC ROLLER ASSEMBLY

### Removal:

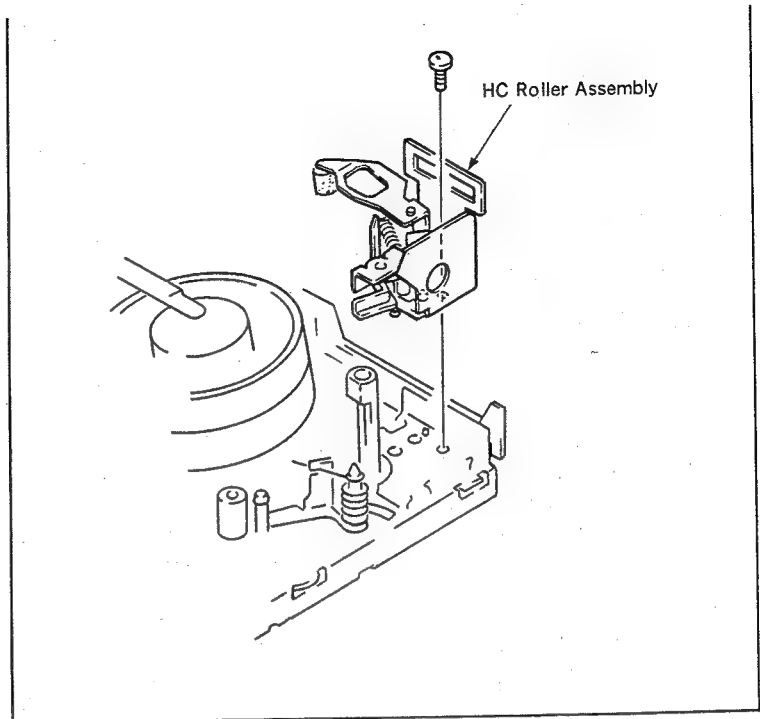
- (1) Remove the Cassette Lid and Side Panel (Left) Assembly referring to Section 1-1.
- (2) Remove a fixing screw and remove the IC SBX1508-41.
- (3) Remove a fixing screw and remove HC Roller Assembly.

### Installation :

- (1) Put the two projections of the HC Roller Assembly into the two holes of the mechanical chassis.
- (2) Install the HC Roller Guide with the fixing screw.
- (3) Install the IC SBX1508-41 with the fixing screw.







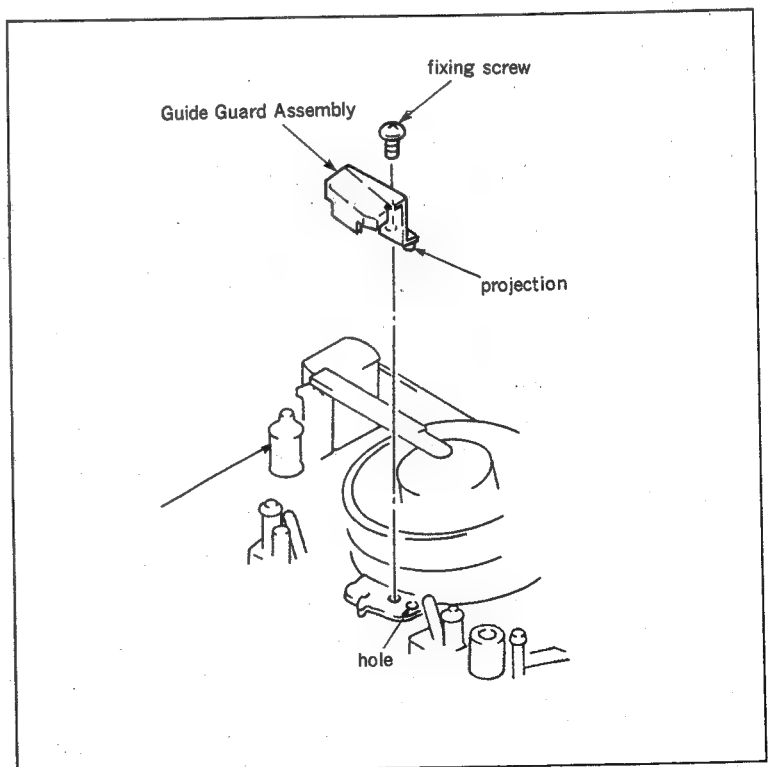
### 3-2. REPLACEMENT OF GUIDE GUARD ASSEMBLY

#### Removal :

- (1) Remove the Cassette Lid and Side Panel (Left) Assembly referring to Section 1-1.
- (2) Remove a fixing screw and remove Guide Guard Assembly.

#### Installation :

- (1) Put a projection of the Guide Guard Assembly into the hole.
- (2) Install the Guide Guard Assembly with the fixing screw.



### 3-3. REPLACEMENT OF DC MOTOR (CAPSTAN MOTOR)

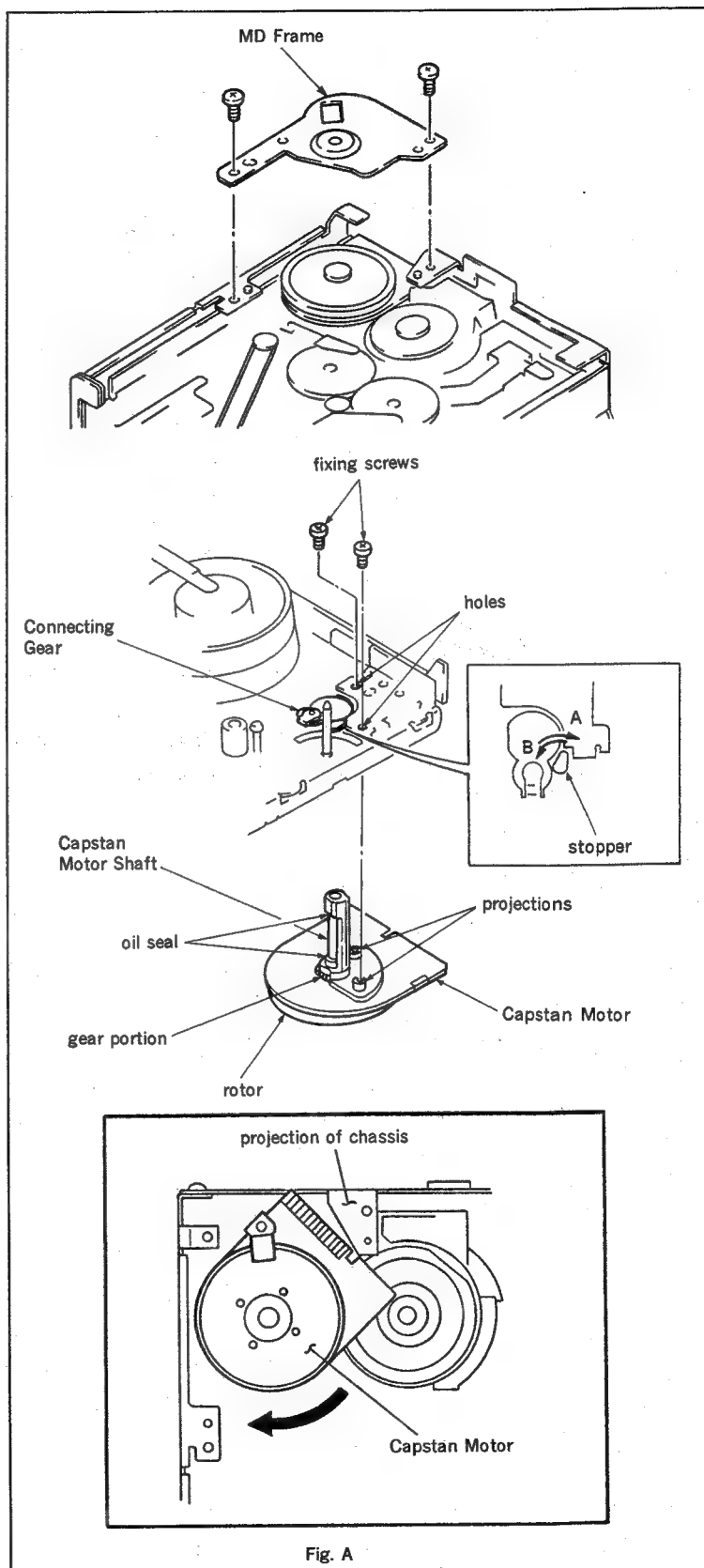
**Tool:** Mode Selector

#### Removal:

- When replacement, be careful not to touch capstan motor shaft, oil seal and rotor.
- (1) Remove the Mechanical Deck Block referring to Section 1-2.
- (2) Remove SS-50 Board referring to Section 1-2-3.
- (3) Set **ULD** mode.
- (4) Remove two fixing screws and remove the MD Frame C.
- (5) Remove the HC Roller Assembly referring to Section 3-1.
- (6) Turn the stopper in the direction of arrow A as far as it will go.
- (7) Remove two fixing screws. Move Capstan Motor in the direction of the arrow and remove it while paying attention not to touch the projection of the chassis. (Fig. A)

#### Installation:

- (1) Move the Capstan Motor in the opposite direction of the arrow and install it in the hole of the chassis. (Fig. A)
- (2) Put the two projections of the Capstan Motor to the holes of the fixing screw. Engage the gear portion of the Capstan Motor to Connecting Gear. Be careful not to damage the gear.
- (3) Install the Capstan Motor with two fixing screws. Check that there is no clearance between the Capstan Motor and chassis.
- (4) Turn the stopper in the direction of arrow B as far as it will go.



### 3-4. REPLACEMENT OF S AND T BRAKES

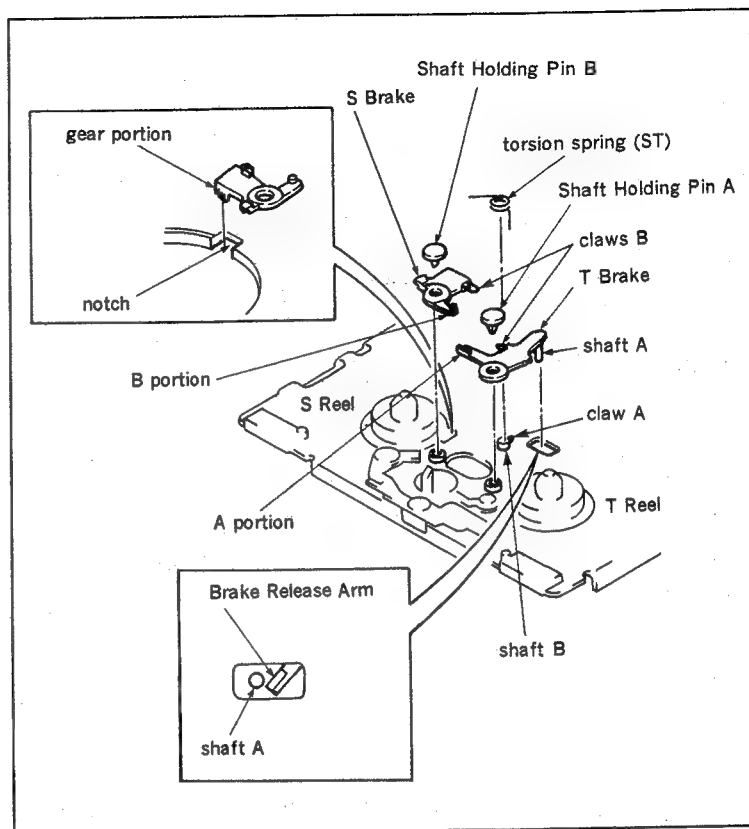
#### Removal:

- (1) Remove the Side Panel (Left) Assembly referring to Section 1-1.
- (2) Remove torsion spring (ST).
- (3) Remove Shaft Holding Pin A and remove T Brake.
- (4) Remove Shaft Holding Pin B and remove S Brake.

#### Installation:

- (1) While putting the gear portion to the notch, install the S Brake.
- (2) Install the Shaft Holding Pin B.
- (3) Put the shaft A of the T Brake to the left side of the Brake Release Arm as shown in the figure and install the T Brake.
- (4) Install the Shaft Holding Pin A.
- (5) Put the torsion spring (ST) under the claw A of the shaft B and hook each ends of spring to the claws B.

**Note:** Before assembling the S and T Brakes, check that the claws of the Shaft Holding Pins A and B are not broken.



### 3-5. REPLACEMENT OF LB BRAKE AND SHAFT HOLDING PIN

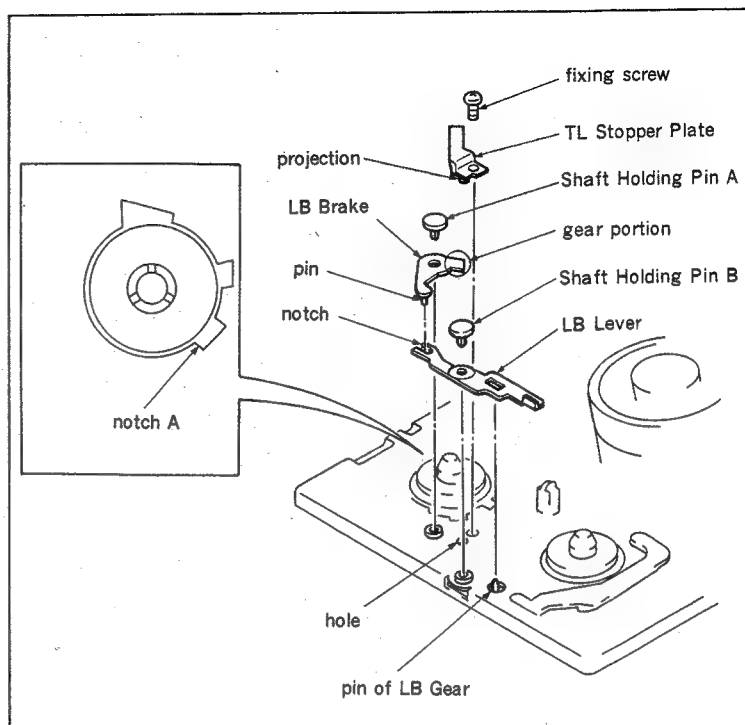
#### Removal :

- (1) Remove the Side Panel (Left) Assembly referring to Section 1-1.
- (2) Remove a fixing screw and remove TL Stopper Plate.
- (3) Remove Shaft Holding Pin A and remove LB Brake.
- (4) Remove Shaft Holding Pin B and remove LB Lever.

#### Installation :

- (1) Install the LB Lever so that the hole of the LB Lever fits to the pin of the LB Gear, and fasten with the Shaft Holding Pin B.
- (2) Put the pin of the LB Brake into the notch of the LB Lever. While putting the gear portion of the LB Brake into the notch A as shown in the figure, install the LB Brake.
- (3) Install the Shaft Holding Pin A.
- (4) Put the projection of the TL Stopper Plate to the hole, and install with the fixing screw.

**Note :** Before assembling the LB Brake and Shaft Holding Pins, check that the claws of the Shaft Holding Pins A and B are not broken.



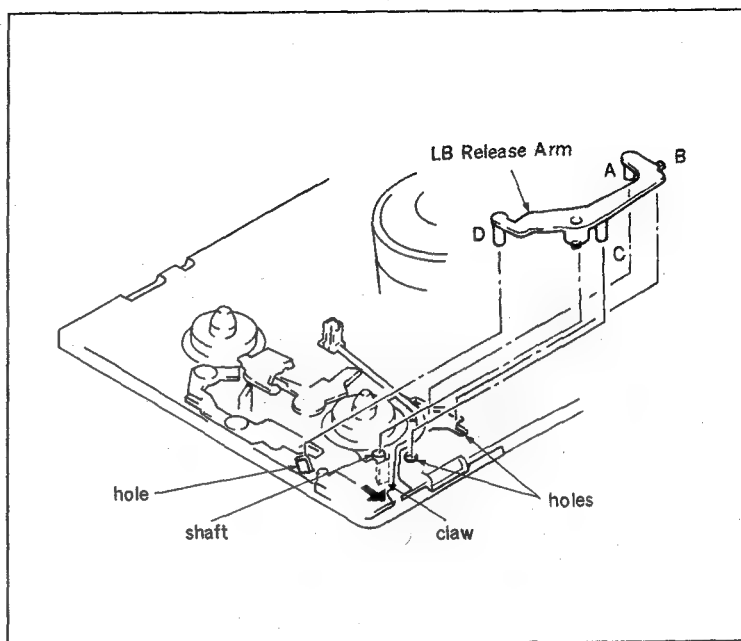
### 3-6. REPLACEMENT OF LB RELEASE ARM

#### Removal:

- (1) Remove the Cassette-up Compartment referring to Section 1-3.
- (2) While pushing claw in the direction of the arrow from top of the unit with a thin flatblade screwdriver, remove LB Release Arm.

#### Installation:

- (1) Put the LB Release Arm to the shaft. Put the A, B, C and D points into the three holes and lock the LB Release Arm with the claw.



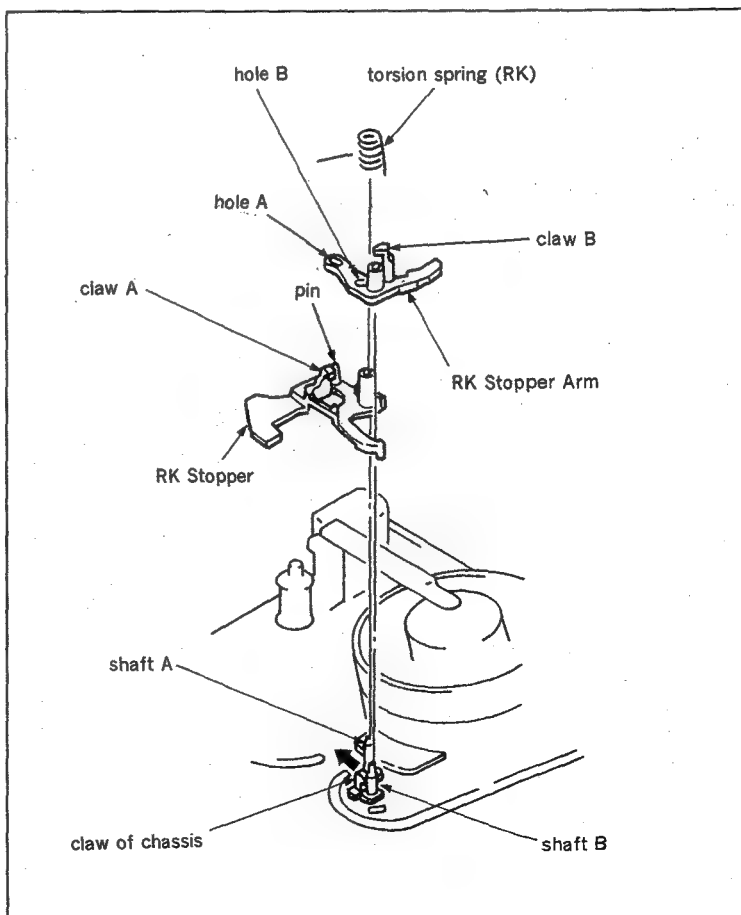
### 3-7. REPLACEMENT OF RK STOPPER AND STOPPER ARM

#### Removal:

- (1) Remove the Cassette-up Compartment referring to Section 1-3.
- (2) Remove torsion spring (RK).
- (3) Release claw of the chassis in the direction of the arrow and remove RK Stopper Arm.
- (4) Remove RK Stopper.

#### Installation:

- (1) Install the RK Stopper to the shaft A.
- (2) Install the RK Stopper Arm to the shaft B. Through the pin of the RK Stopper into the hole A of the RK Stopper Arm and lock the RK Stopper Arm with the claw of the chassis to the hole B.
- (3) Put the torsion spring (RK) to the shaft of the RK Stopper and hook the ends of it to the claws A and B.



### 3-8. REPLACEMENT OF PINCH ARM ASSEMBLY AND TG-7 ARM ASSEMBLY

#### Tool : Mode Selector

Sony Oil

Sony Grease

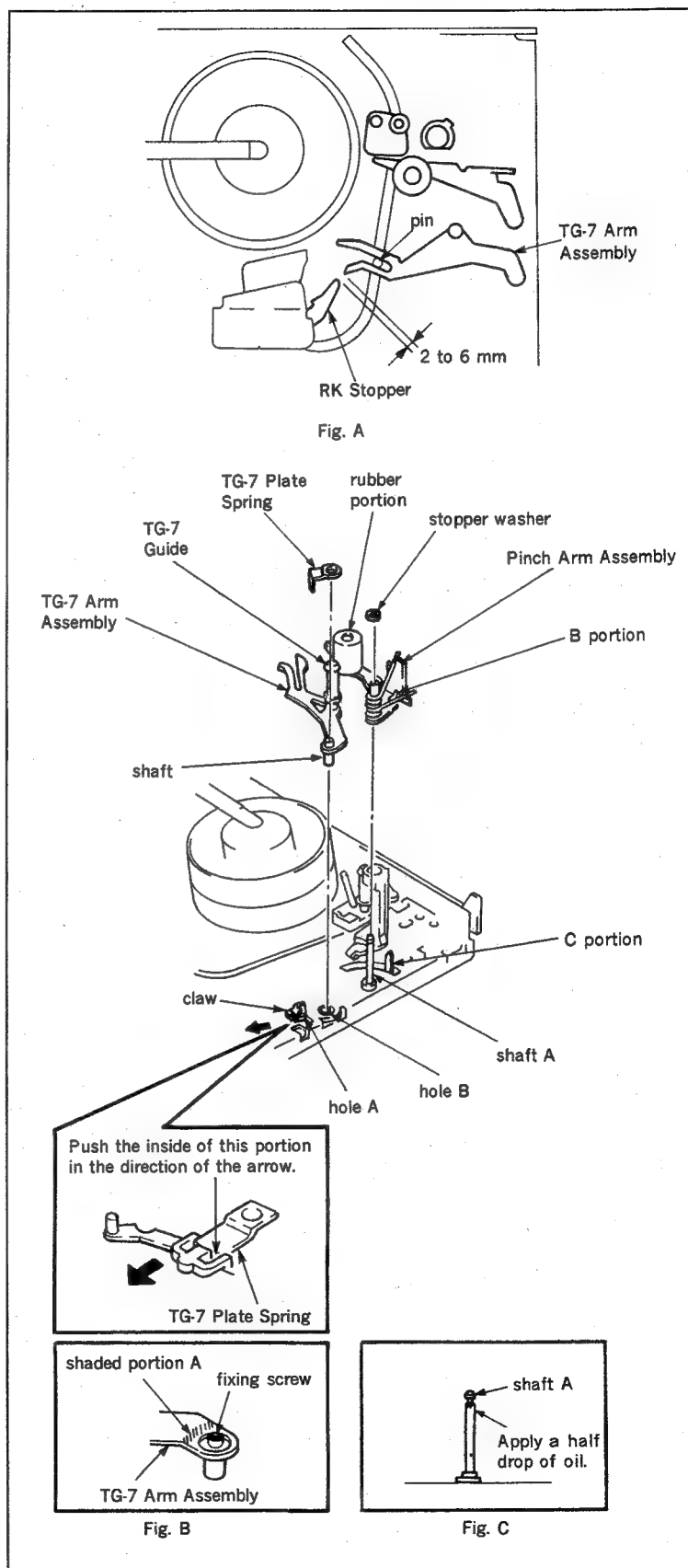
#### Removal :

- (1) Remove the Cassette-up Compartment referring to Section 1-3.
- (2) Move that TG-7 Arm Assembly in order to be placed as shown in fig. A with Mode Selector.
- (3) Remove a stopper washer and remove Pinch Arm Assembly.
- (4) Bend the claw in the hole A in the direction of the arrow with a thin flatblade screwdriver and remove TG-7 Plate Spring.
- (5) Remove TG-7 Arm Assembly.

#### Installation :

- (1) Smear a grease to inside edge and bottom of the hole B.
- (2) Put the pin of the longitudinal hole on the chassis to the groove of the TG-7 Arm Assembly and put the shaft into the hole B.
- (3) Smear a grease to the shaded portion A of the TG-7 Arm Assembly. Be careful not to smear a grease to the fixing screw of the TG-7 Arm Assembly. (Fig. B)
- (4) Put the TG-7 Plate Spring into the hole A. Lock the claw and install it.
- (5) Apply a half drop of oil to the shaft A. (Fig. C)
- (6) Put the Pinch Arm Assembly in the shaft A and put the C portion of the Pinch Sub Arm Assembly into the B portion. When putting the Pinch Arm Assembly into the shaft A, be careful not to touch the TG-7 Guide and rubber portion.
- (7) Fasten the stopper washer.

**Note :** After replacement, perform the Tape Path Adjustment referring to Section 5.



### 3-9. REPLACEMENT OF TG-2 ASSEMBLY

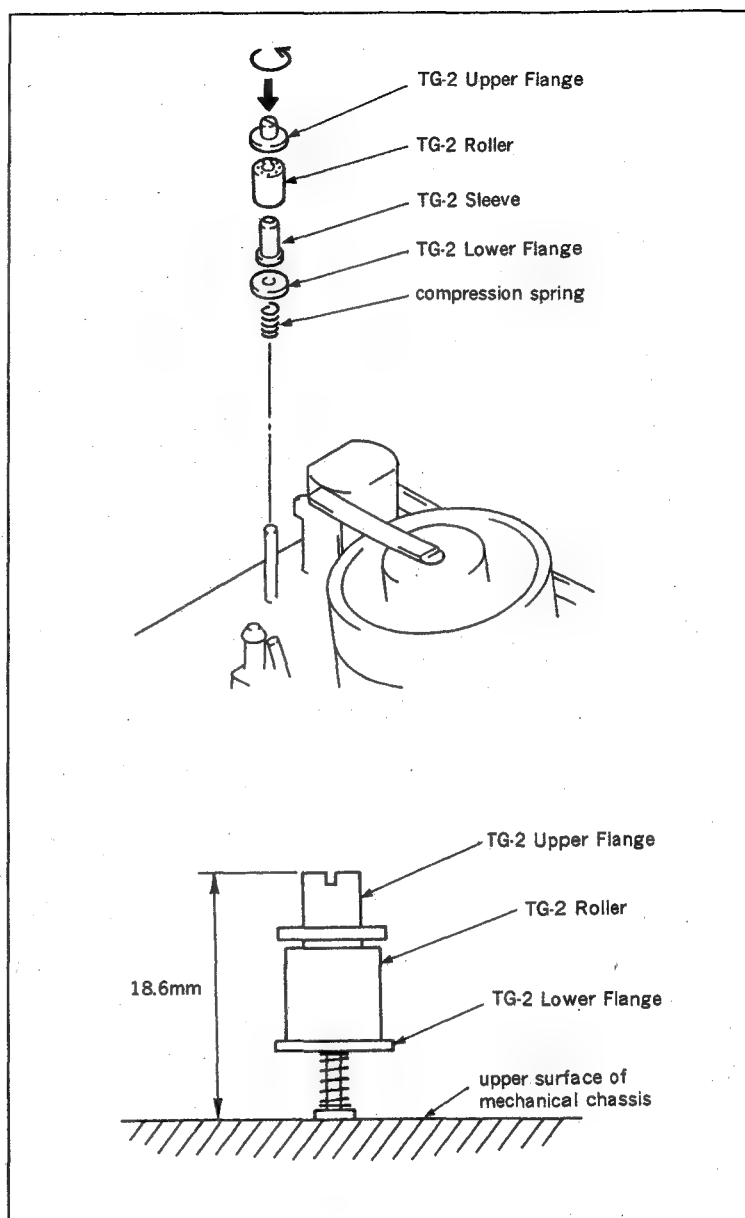
#### Removal:

- (1) Remove the Cassette Lid and Side Panel (Left) Assembly referring to Section 1-1.
- (2) Turn the arrow portion counterclockwise and remove TG-2 Upper Flange.
- (3) Remove TG-2 Roller, TG-2 Sleeve and TG-2 Lower Flange and a compression spring.

#### Installation:

- (1) Install the compression spring, TG-2 Lower Flange, TG-2 Sleeve and TG-2 Roller to the shaft.
- (2) Turn the TG-2 Upper Flange about 4 to 6 turns and install it to the shaft. After installation, perform the TG-2 Upper Flange Height Preset.
  - Turn the TG-2 Upper Flange and adjust the height of TG-2 as shown in the figure.

**Note:** After replacement, perform the Tape Path Adjustment referring to Section 5.



### 3-10. REPLACEMENT OF S REEL TABLE ASSEMBLY

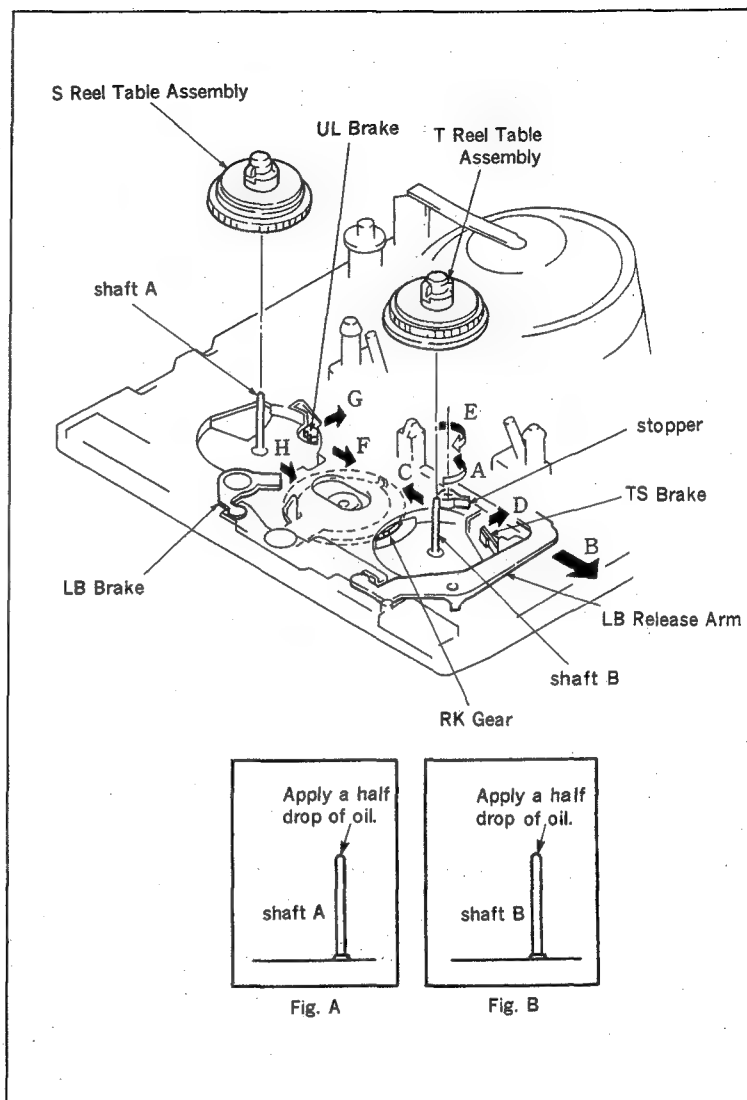
**Tool:** Sony Oil  
Cassette Tape  
Torque Cassette

#### Removal:

- (1) Remove the S Brake referring to Section 3-4.
- (2) Remove the Tension Regulator Band Assembly referring to Section 3-12.
- (3) Remove S Reel Table Assembly.

#### Installation:

- (1) Apply a half drop of oil on the top of shaft A. (Fig. A)
- (2) Move RK Gear in the direction of the arrow F. Move UL Brake in the direction of the arrow G. Move LB Brake in the direction of the arrow H.
- (3) Install the S Reel Table Assembly to the shaft A.
- (4) Assemble the parts with removal steps (1) to (4) in reverse order.
- (5) Adjust the Tension Regulator FWD Portion referring to Section 3-13.
- (6) Perform the FWD Back Tension Adjustment referring to Section 4-1.



### 3-11. REPLACEMENT OF REEL TABLE ASSEMBLY

**Tool:** Sony Oil

#### Removal:

- (1) Remove the T Brake referring to Section 3-4.
- (2) Turn stopper about 90 degrees in the direction of the arrow A.
- (3) Move LB Release Arm in the direction of the arrow B and remove T Reel Table Assembly.

#### Installation:

- (1) Apply a half drop of oil on the top of shaft B. (Fig. B)
- (2) Move RK Gear in the direction of the arrow C. Move TS Brake in the direction of the arrow D.
- (3) Move LB Release Arm in the direction of the arrow B and install the T Reel Table Assembly

to the shaft B.

- (4) Turn the stopper in the direction of the arrow E as far as it will go.
- (5) Assemble the T Brake referring to Section 3-4.



### 3-12. REPLACEMENT OF TENSION REGULATOR BAND ASSEMBLY AND TENSION REGULATOR ARM ASSEMBLY

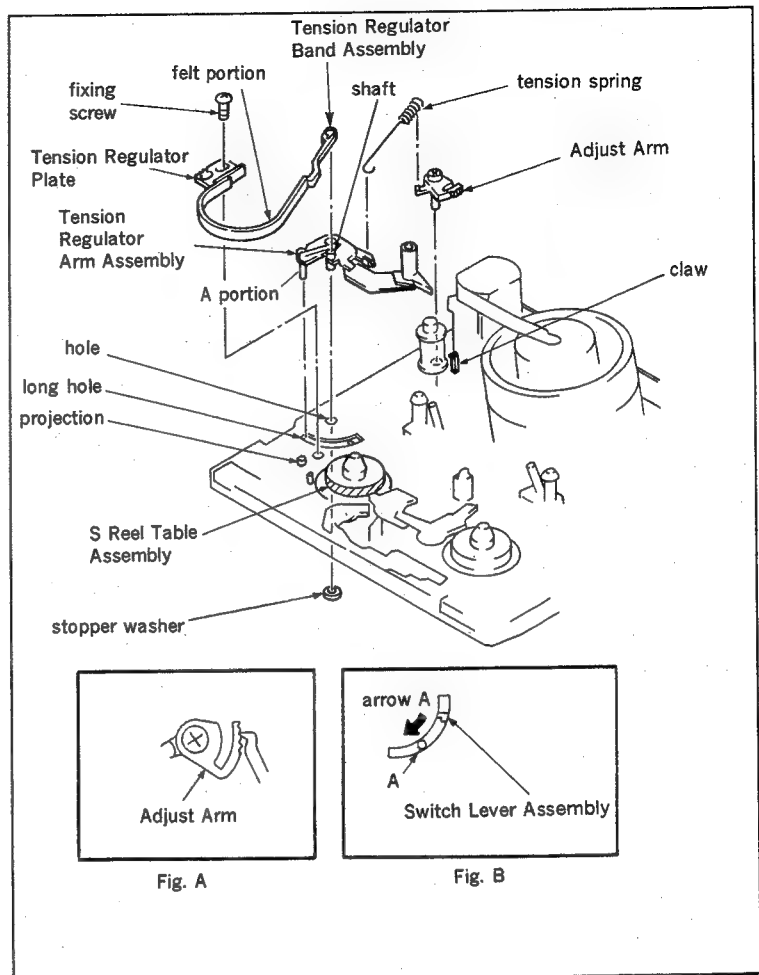
**Tool :** Sony Oil  
Cassette Tape  
Torque Cassette

#### Removal :

- (1) Remove the SS-50 Board referring to Section 1-2-3.
- (2) Remove the Cassette-up Compartment referring to Section 1-3.
- (3) Remove the TL Holder Plate referring to Section 4-5.
- (4) Remove a fixing screw.
- (5) Remove Tension Regulator Band Assembly from the shaft of Tension Regulator Arm Assembly with a thin flatblade screwdriver. Be careful not to damage the Tension Regulator Band and touch the felt portion of it.
- (6) Remove a tension spring.
- (7) Remove stopper washer from the back of mechanical chassis. Remove Tension Regulator Arm Assembly.
- (8) Release claw and remove Adjust Arm.

#### Installation :

- (1) Engage the Adjust Arm so that the claw can be locked as shown in figure A.
- (2) Apply a half drop of oil to the fixing hole of the Tension Regulator Arm Assembly.
- (3) Install Tension Regulator Arm Assembly so that the A portion is positioned in the side of arrow A from Switch Lever Assembly. (Fig. B)



- (4) Hold the Tension Regulator Arm Assembly and install it with the stopper washer from the back of the mechanical chassis.
- (5) Hook the R hook side of the tension spring to the Adjust Arm as shown in the figure. Hook the opposite side of the tension spring to the Tension Regulator Arm Assembly.
- (6) Install the Tension Regulator Band Assembly to the shaft of the Tension Regulator Arm Assembly so that the felt portion goes along the shaded portion of S Reel Table Assembly. Be careful not to damage the Tension Regulator Band Assembly and touch the felt portion.
- (7) Install Tension Regulator Plate portion of the Tension Regulator Band Assembly to the projection of the mechanical chassis and thread the fixing screw but do not tighten.
- (8) Install the TL Holder Plate referring to Section 3-5.
- (9) Assemble the parts with removal steps (2) to (4) in reverse order.
- (10) Install the Mechanical Deck Block.
- (11) Adjust the Tension Regulator FWD Position referring to Section 3-13.
- (12) Perform the FWD Back Tension Adjustment referring to Section 4-1.

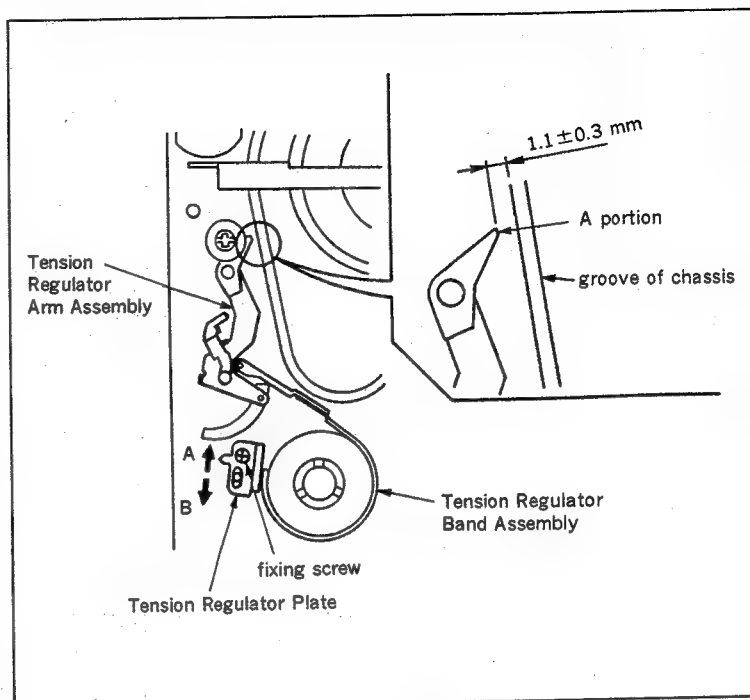
### 3-13. TENSION REGULATOR FWD POSITION PRESET

**Tool :** Cassette Tape

**Removal :**

- (1) Remove the Cassette Lid and Side Panel (Left) Assembly referring to Section 1-1.
- (2) Insert a cassette tape and put the unit into the **PLAY** mode.
- (3) Check that the clearance between A portion of the Tension Regulator Arm Assembly and groove of the chassis is  $1.1 \pm 0.3$  mm. When it is out of the specification, eject the cassette tape and perform the following adjustments.
- (4) Loosen the fixing screw of the Tension Regulator Band Assembly.
- (5) If the clearance more than the specification, move the Tension Regulator Plate in the direction of the arrow A and tighten the fixing screw. If the space is less than the specification, move the Tension Regulator Plate in the direction of the arrow B and tighten the fixing screw.
- (6) Perform steps (2) and (3) again and check that the clearance meets the required specification.

**Note :** Use a cassette tape which has been advanced half way through minutes.

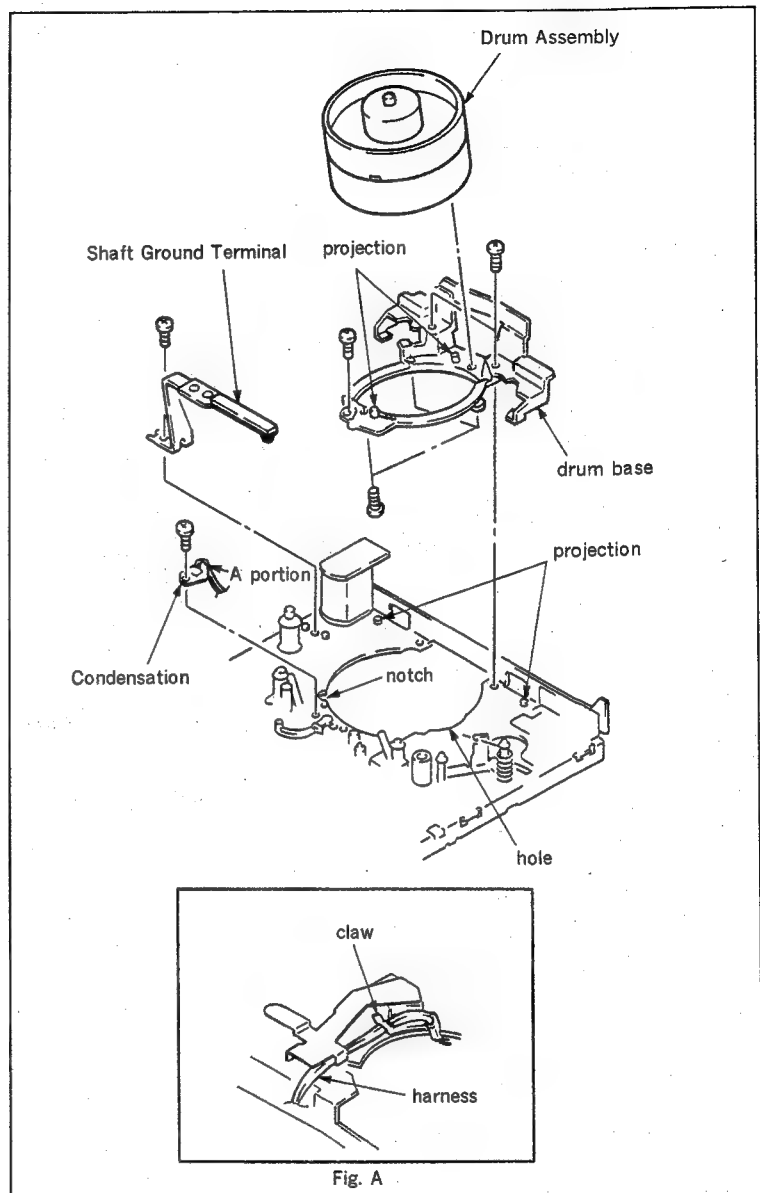


### 3-14. REPLACEMENT OF DRUM ASSEMBLY AND CONDENSATION SENSOR

#### Removal:

- (1) After putting the unit into the **EJECT** mode, pull out the Mechanical Deck Block referring to Section 1-2.
- (2) Remove the SS-50 Board from the unit referring to Section 1-2-3.
- (3) Remove the Cassette-up Compartment referring to Section 1-3.
- (4) Remove the HC Roller Assembly referring to Section 3-1.
- (5) Remove the Guide Guard Assembly referring to Section 3-2.
- (6) Remove a fixing screw and remove Shaft Ground Terminal.
- (7) Remove the three fixing screws of drum base and remove Drum Assembly with the drum base from the mechanical chassis.
- (8) Remove three fixing screws and remove Drum Assembly from the drum base.
- (9) Disconnect connector of Condensation Sensor from the Loading Motor.
- (10) Remove a fixing screw and remove the Condensation Sensor.

**Note:** Be careful not to touch the head chip.



**Installation :**

- (1) Put the A portion of the Condensation Senser into the notch of the mechanical chassis and tighten the fixing screw.
- (2) Connect the connector of the Condensation Sensor to the Loading Motor.
- (3) Pinch the harness of the Condensation Sensor to the Plate SS Assembly's claw of the back of mechanical chassis. (Fig. A)
- (4) Put the Drum Assembly to the two projection of the drum base and tighten three fixing screws.
- (5) Put the drum base to the two projections of the mechanical chassis and tighten three fixing screws.
- (6) Put the Shaft Ground Terminal to the two projections of the mechanical chassis and tighten the fixing screw.
- (7) Install the parts with removal steps (2) to (5) in reverse order.

**Note:** Be careful not to cut the harness. Be careful not to touch the head chip.

**Note:** After replacement, perform the Tape Path Adjustment referring to Section 5.

### 3-15. REPLACEMENT OF ROTARY UPPER DRUM, AND LOWER DRUM

**Tool : Rotary Drum Tool**

(supplied accessory of Repair Rotary Upper Drum)

L-shaped wrench

(across flat has 1.5 mm)

**Removal :**

- (1) Remove the Drum Assembly referring to Section 3-14.
- (2) Remove two fixing screws A. (Fig. A)
- (3) Install tool A to the screw hole with two accessory supplied screws. Thread the accessory supplied hexagonal screws into the tool A, and Rotary Upper Drum will move up and can be removed. (Fig. B)

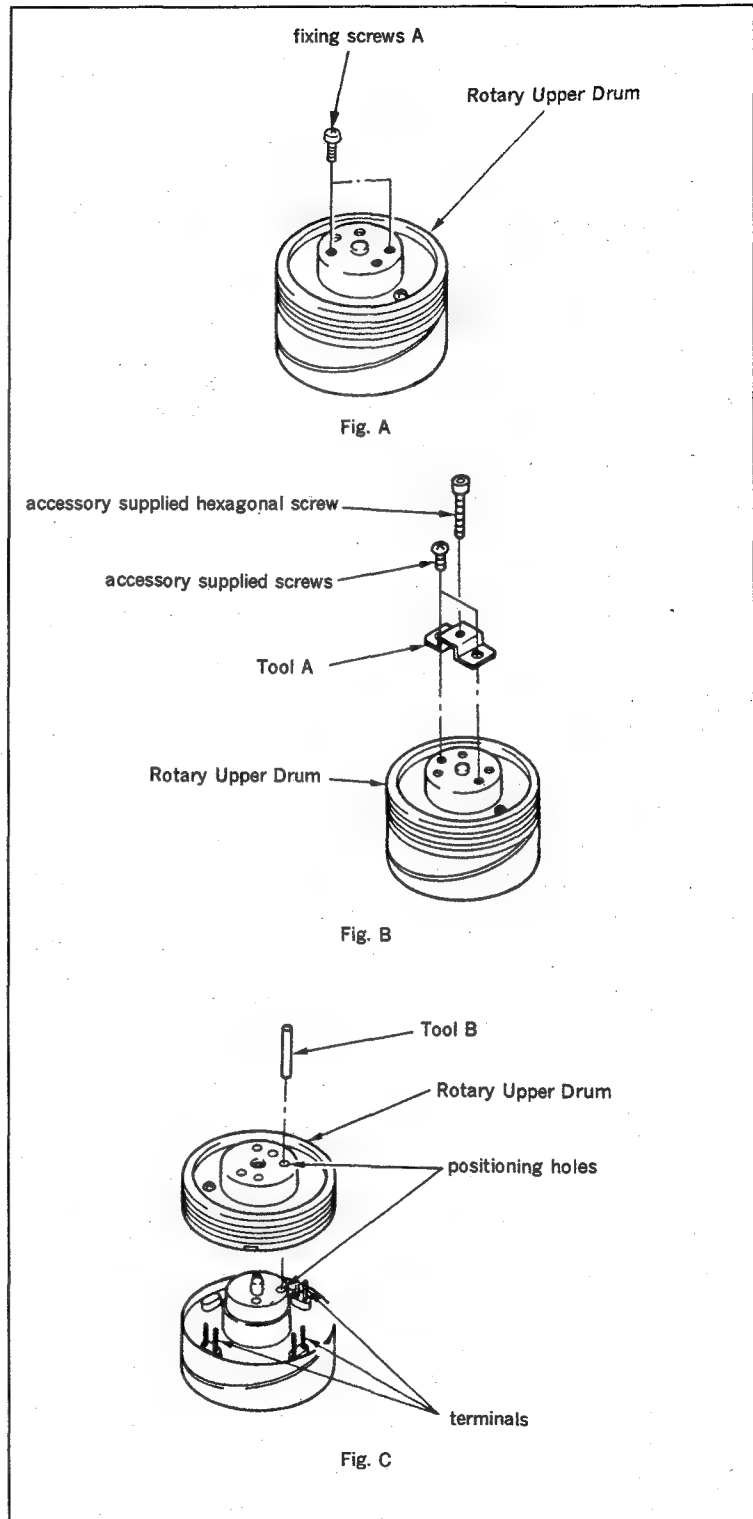
**Installation :**

- (1) Clean the flange surface and contact surface of the new Rotary Upper Drum. Check that no dust and flaw are left over.
- (2) While adjusting the position of Rotary Upper Drum and positioning hole with tool B, insert the Rotary Upper Drum lightly.

**Note :** At this time, check that the terminals project out from the PC Board of the Rotary Upper Drum. When the terminals are caught, correct them with a pair of tweezers, etc.. (Fig. C)

- (3) Remove tool B and lightly push down the Rotary Upper Drum by hand. If it does not go down to the bottom, thread two fixing screws A to the Rotary Upper Drum alternately but do not tighten.
- (4) Insert tool B into the positioning hole and check that it can be inserted smoothly again. If tool B cannot be inserted, loosen two fixing screws A and adjust the position of the Rotary Upper Drum by precision screwdriver etc..
- (5) Tighten two fixing screws A.

**Note :** After replacement, perform the Tape Path Adjustment referring to Section 5.



### 3-16. REPLACEMENT OF EJECT LEVER, SWITCH LEVER ASSEMBLY AND PINCH SUB ARM ASSEMBLY

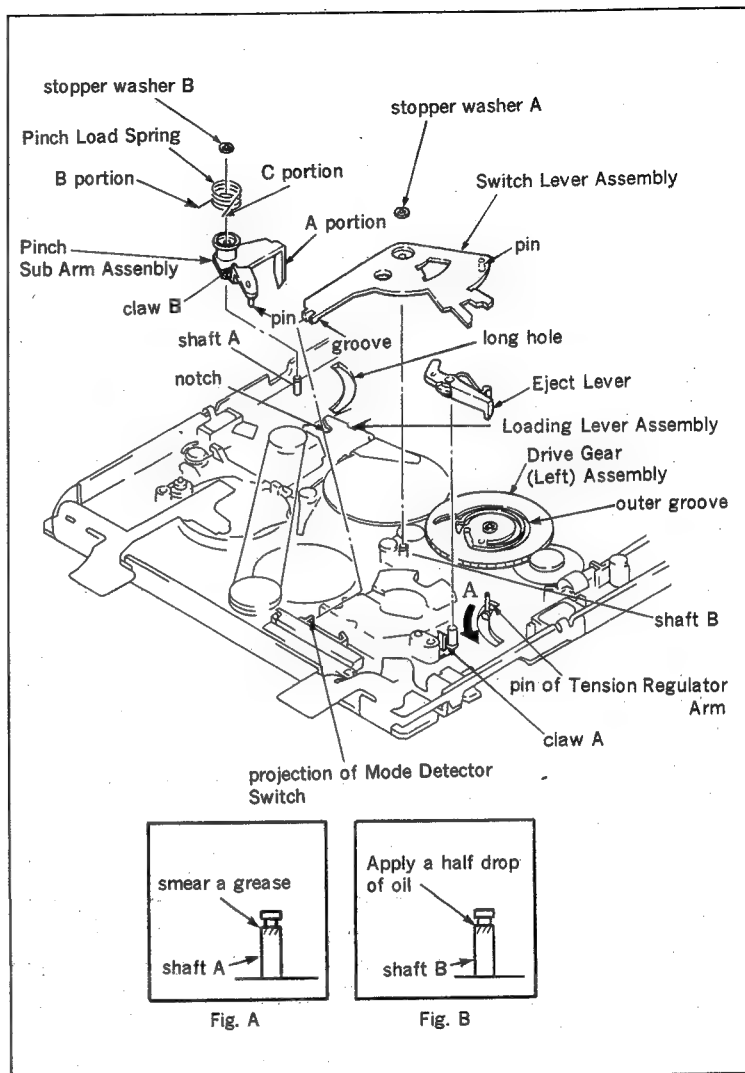
**Tool :** Mode Selector  
Sony Grease  
Sony Oil

#### Removal :

- (1) Remove the Capstan Motor referring to Section 3-3.
- (2) Put the unit into the **STOP** mode.
- (3) Release claw A and remove Eject Lever.
- (4) Remove stopper washer A and remove Switch Lever Assembly.
- (5) Remove Pinch Load Spring.
- (6) Remove stopper washer B and remove Pinch Sub Arm Assembly.

#### Installation :

- (1) Smear a grease to shaft A. (Fig. A)
- (2) While putting the A portion of the Pinch Sub Arm Assembly into the longitudinal hole, put the pin into the notch of the Loading Lever Assembly.
- (3) Fasten stopper washer B.
- (4) Hook the B portion of the Pinch Load Spring between claw B and chassis. Hook the C portion of the Pinch Load Spring to the claw B, and install it.
- (5) Apply a half drop of oil to shaft B. (Fig. B)
- (6) Put the groove of the Switch Lever Assembly to the projection of the Mode Detector Switch and assemble the Switch Lever Assembly to shaft B. Put the pin of the Switch Lever Assembly into the outer groove of Drive Gear (left) Assembly. If the Tension Regulator Arm Assembly is installed, move the pin of the Tension Regulator Arm Assembly in the direction of the arrow A.
- (7) Fasten the stopper washer A.
- (8) Install the Eject Lever and lock claw A.
- (9) After putting the unit into the **ULD** mode, install the Capstan Motor referring to Section 3-3.



### 3-17. REPLACEMENT OF TIMING BELT (L), RC GEAR ASSEMBLY, LOADING LEVER ASSEMBLY, TIMING BELT (S) AND CONNECTING GEAR ASSEMBLY

**Tool :** Mode Selector

Sony Oil

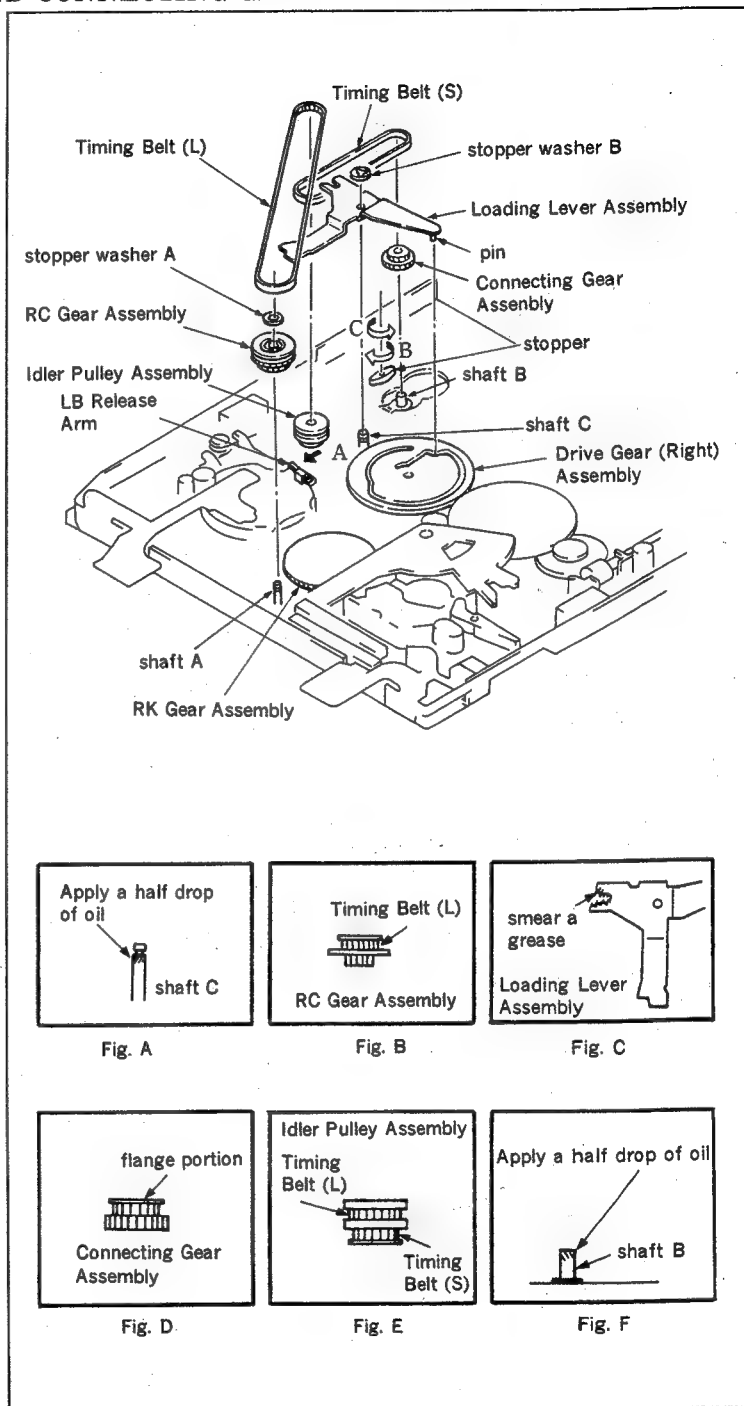
Sony Grease

#### Removal :

- (1) Remove the Capstan Motor referring to Section 3-3.
- (2) Remove the Pinch Sub Arm Assembly referring to Section 3-16.
- (3) Put the unit into the **STOP** mode.
- (4) Remove stopper washer A. Remove RC Gear Assembly together with Timing Belt (L) from shaft A.
- (5) Remove the Timing Belt (L) from Idler Pulley Assembly.
- (6) Remove stopper washer B. While pushing LB Release Arm in the direction of arrow A, remove Loading Lever Assembly.
- (7) Turn the stopper about 90 degrees in the direction of the arrow B.
- (8) Remove Connecting Gear Assembly together with Timing Belt (S) from shaft B. Be careful not to touch the flange portion. (Fig. D)
- (9) Remove the Timing Belt (S) from the Idler Pulley Assembly.

#### Installation :

- (1) Apply a half drop of oil shaft B. (Fig. F)
- (2) Hook the Timing Belt (S) to the Connecting Gear Assembly and hook the opposite side of it to the gear of the Idler Pulley Assembly. (Fig. E)
- (3) Install the Connecting Gear Assembly to shaft B with the Timing Belt (S) hooked on.
- (4) Turn the stopper in the direction of arrow C as far as it will go.
- (5) Apply a half drop of oil on shaft C. (Fig. A)





- (6) Move the LB Release Arm in the direction of arrow A and put the Loading Lever Assembly to shaft C. Put the pin of the Loading Lever Assembly into the groove of Drive Gear (Right) Assembly.
- (7) Fasten the stopper washer B.
- (8) Hook the Timing Belt (L) to the gear of the RC Gear Assembly as shown in figure B and hook the opposite side of it to the gear of the Idler Pulley Assembly. (Fig. E)
- (9) Install the RC Gear Assembly with the Timing Belt (L) on to shaft A. Engage the RC Gear Assembly with the gear of RK Gear Assembly.
- (10) Fasten the stopper washer A.
- (11) Smear a grease to the Loading Lever Assembly as shown in fig. C.
- (12) Install the Pinch Sub Arm Assembly referring to Section 3-16.
- (13) After putting the unit into the ULD mode, install the Capstan Motor referring to Section 3-3.

### 3-18. REPLACEMENT OF IDLER PULLEY, TS BRAKE ASSEMBLY, LB GEAR ASSEMBLY AND RK GEAR ASSEMBLY

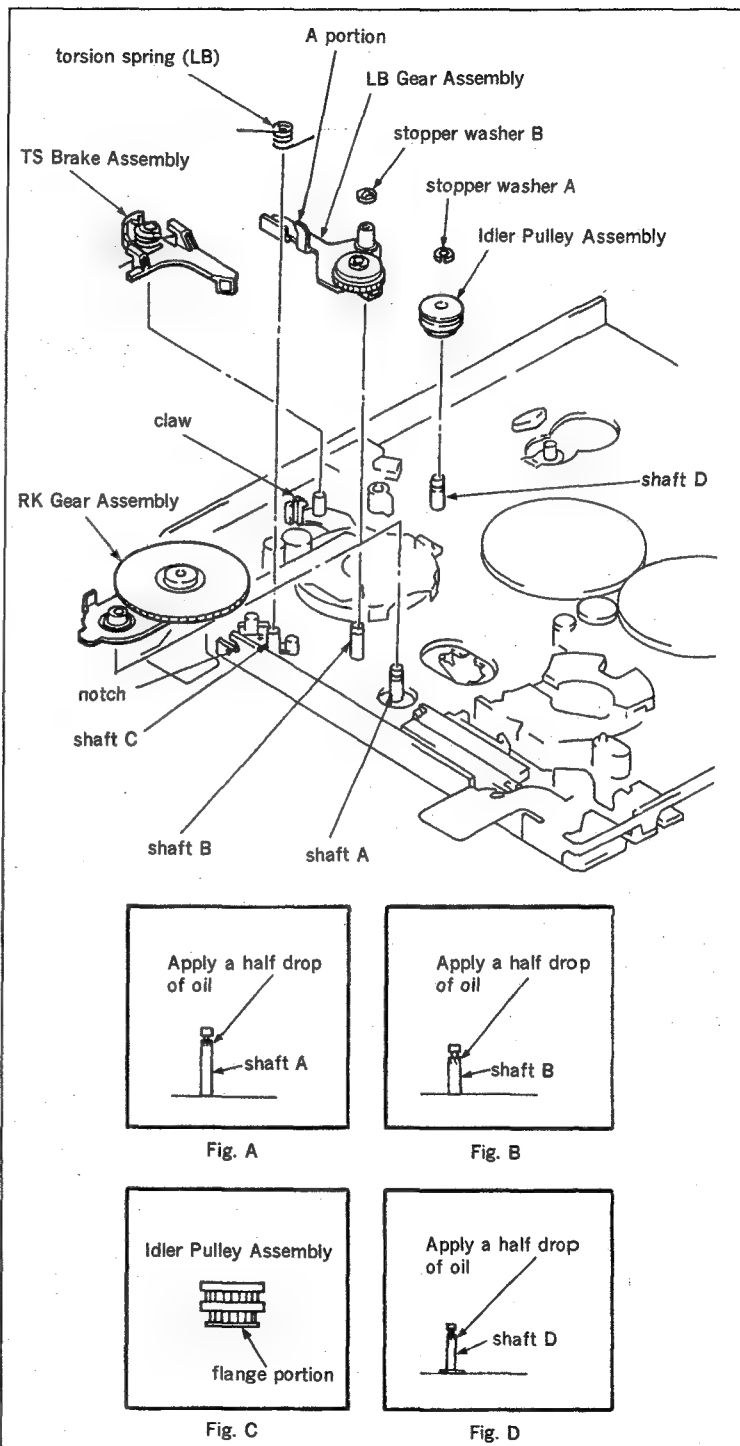
**Tool :** Mode Selector  
Sony Oil

#### Removal :

- (1) Remove the Capstan Motor referring to Section 3-3.
- (2) Remove the Switch Lever Assembly referring to Section 3-16.
- (3) Remove the Timing Belt (L), RC Gear Assembly, Loading Lever Assembly, Timing Belt (S) and Connecting Gear Assembly referring to Section 3-17.
- (4) Remove stopper washer A and remove Idler Pulley. Be careful not to touch the flange portion of the Idler Pulley, (Fig. C)
- (5) Release the claw and remove TS Brake Assembly.
- (6) Remove torsion spring (LB).
- (7) Remove stopper washer B and remove LB Gear Assembly.
- (8) Remove RK Gear Assembly.

#### Installation :

- (1) Apply a half drop of oil to shaft A. (Fig. A)
- (2) Install the RK Gear Assembly horizontally to the shaft A.
- (3) Apply a half drop of oil to shaft B. (Fig. B)
- (4) Install the LB Gear Assembly to shaft B with stopper washer B.
- (5) Put torsion spring (LB) into shaft C. Hook it to the notch of the mechanical chassis and A portion of the LB Gear Assembly.
- (6) Install the TS Brake Assembly and lock the claw.
- (7) Apply a half drop of oil to shaft D. (Fig. D)
- (8) Install the Idler Pulley to shaft D. Fasten the stopper washer A.
- (9) Install the Timing Belt (L), RC Gear Assembly, Loading Lever Assembly, Timing Belt (S) and Connecting Gear Assembly referring to Section 3-17.
- (10) Install the Switch Lever Assembly referring to 3-16.
- (11) After putting the unit into the **ULD** mode, install the Capstan Motor referring to Section 3-3.



### 3-19. REPLACEMENT OF UL GEAR, UL BRAKE, UL ARM AND LB LEAF SPRING

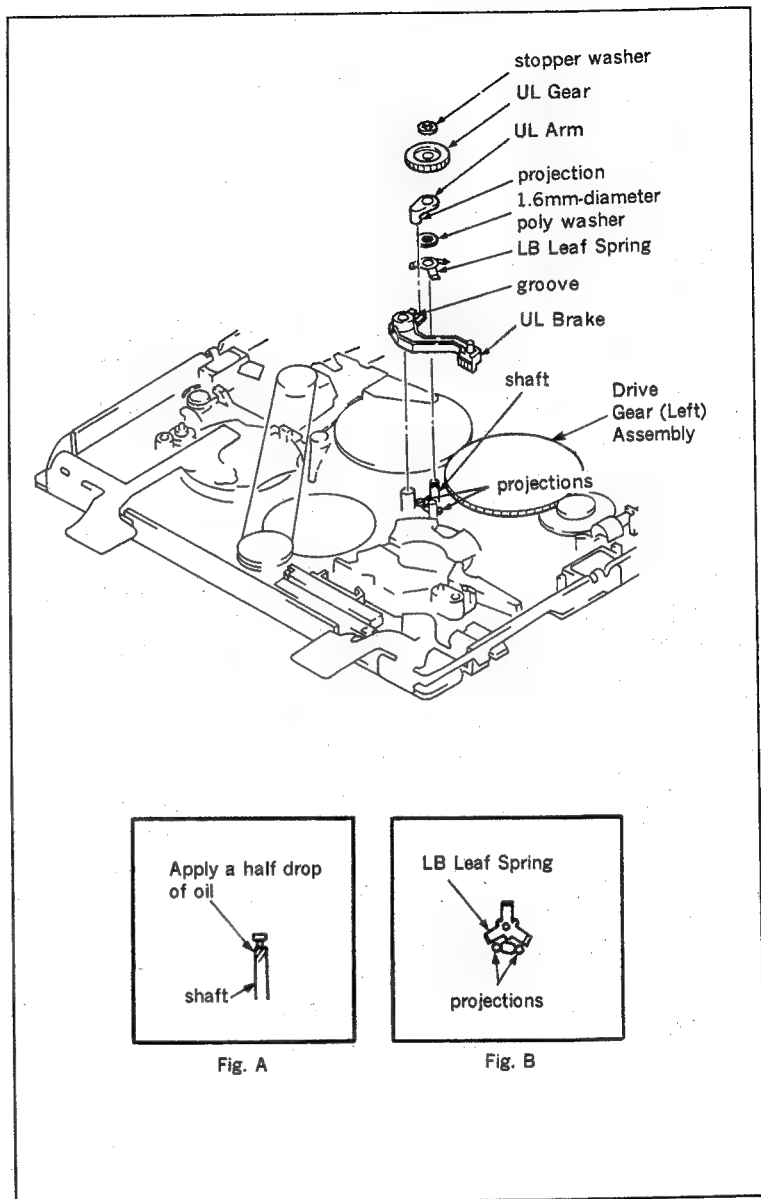
**Tool :** Sony Oil

**Removal :**

- (1) Remove the Switch Lever Assembly referring to Section 3-16.
- (2) Remove stopper washer and remove UL Gear.
- (3) Remove UL Arm, 1.6 mm-diameter poly washer and LB Leaf Spring.
- (4) Remove UL Brake.

**Installation :**

- (1) Install the UL Brake.
- (2) Apply a half drop of oil to the shaft. (Fig. A)
- (3) Install the LB Leaf Spring to the shaft and fasten it with the 1.6 mm-diameter poly washer as shown in fig. B.
- (4) Install the UL Arm to the shaft so that the projection is put into the groove of the UL Brake.
- (5) Install the UL Gear to the shaft. Engage it with the gear of the Drive Gear (Left) Assembly.
- (6) Fasten the stopper washer.
- (7) Install the Switch Lever Assembly referring to Section 3-16.



### 3-20. REPLACEMENT OF COASTER (RIGHT) ASSEMBLY AND DRIVE GEAR (RIGHT) ASSEMBLY

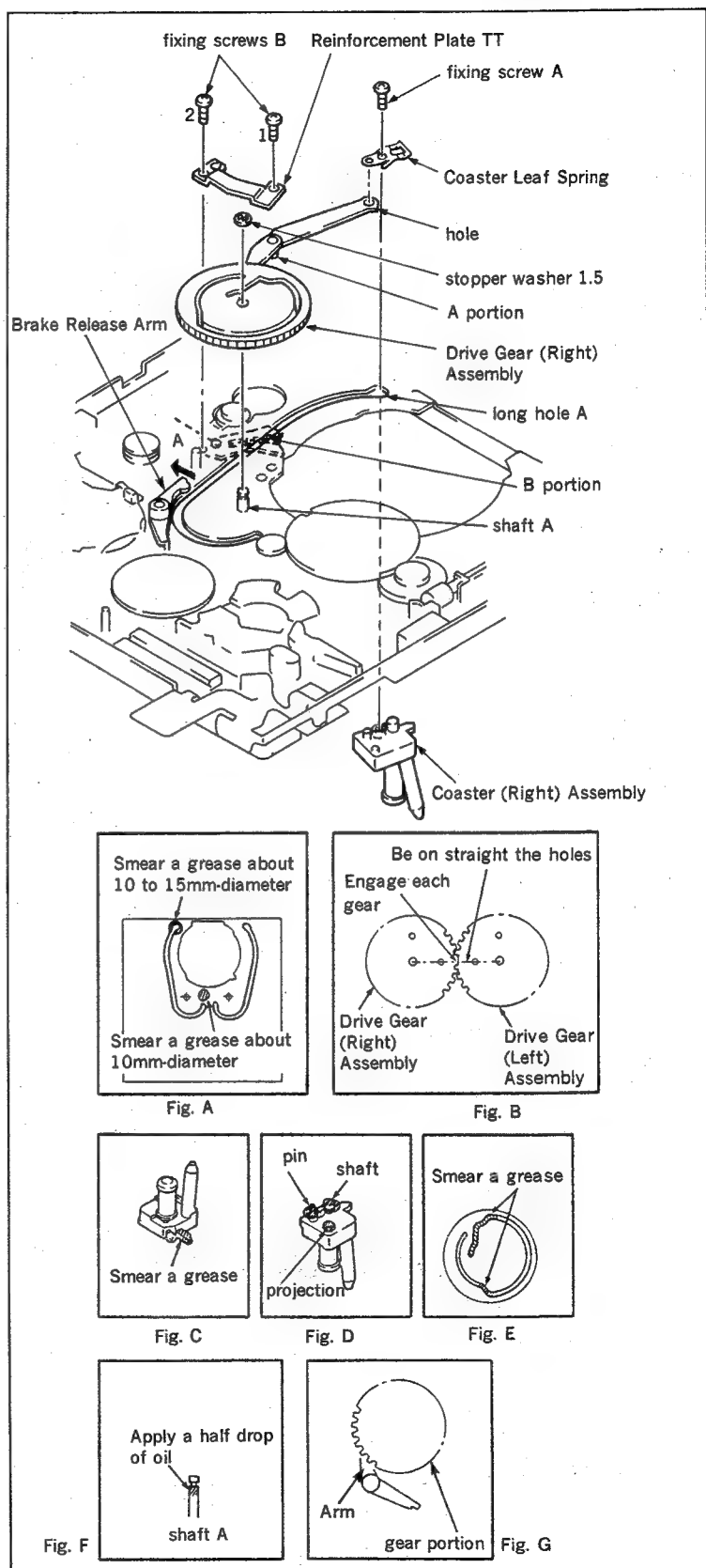
**Tool :** Mode Selector  
Sony Oil  
Sony Grease

#### Removal :

- (1) Remove the Capstan Motor referring to Section 3-3.
- (2) Remove the Drum Assembly referring to Section 3-14.
- (3) Remove the Switch Lever Assembly referring to Section 3-16.
- (4) Remove the Timing Belt (L), RC Gear Assembly and Loading Lever Assembly referring to Section 3-17.
- (5) Remove fixing screw A. Remove the Coaster Leaf Spring and Coaster (Right) Assembly.
- (6) Remove two fixing screws B and remove Reinforcement Plate TT.
- (7) Remove the stopper washer 1.5 and remove the Drive Gear (Right) Assembly.

#### Installation :

- (1) Smear a grease to the mechanical chassis as shown in fig. A.
- (2) Apply a half drop of oil to shaft A. (Fig. F)
- (3) Smear a grease to pin, shaft and projection of the Coaster (Right) Assembly. (Fig. D)
- (4) Install the pin and shaft of the Coaster (Right) Assembly to the longitudinal hole A of the mechanical chassis.
- (5) Move the Brake Release Arm in the direction of the arrow A.



- (6) Put the A portion of the Drive Gear (Right) Assembly into the B portion and put the hole of it to the pin of the Coaster (Right) Assembly. Install the Drive Gear (Right) Assembly to shaft A. Engage it with Drive Gear (Left) Assembly as shown in fig. B. Check that the Brake Release Arm Assembly is under the gear portion of the Drive Gear Assembly. (Fig. G)
- (7) Fasten the stopper washer 1.5.
- (8) Put the Coaster Leaf Spring to the shaft and pin of the Coaster (Right) Assembly and install it with fixing screw A. At this time, the tightening torque of fixing screw A is about  $0.05 \text{ N}\cdot\text{m}$   $\{500\text{gf}\cdot\text{cm}\}$ . If tightened too much, the Coaster (Right) Assembly and Coaster Leaf Spring will be damaged.
- (9) Install the Reinforcement Plate TT to the projection of chassis and tighten the two fixing screws B in order.
- (10) Smear a grease as shown in figures C and F.
- (11) Install the Timing Belt (L), RC Gear Assembly and Loading Lever Assembly referring to Section 3-17.
- (12) Install the Switch Lever Assembly referring to Section 3-16.
- (13) After putting the unit into the **ULD** mode, install the Drum Assembly referring to Section 3-14.
- (14) Install the Capstan Motor referring to Section 3-3.

**Note :** After replacement, perform the Tape Path Adjustment referring to Section 5.

### 3-21. REPLACEMENT OF COASTER (LEFT) ASSEMBLY AND DRIVE GEAR (LEFT) ASSEMBLY

**Tool :** Mode Selector  
Sony Oil  
Sony Grease

#### Removal :

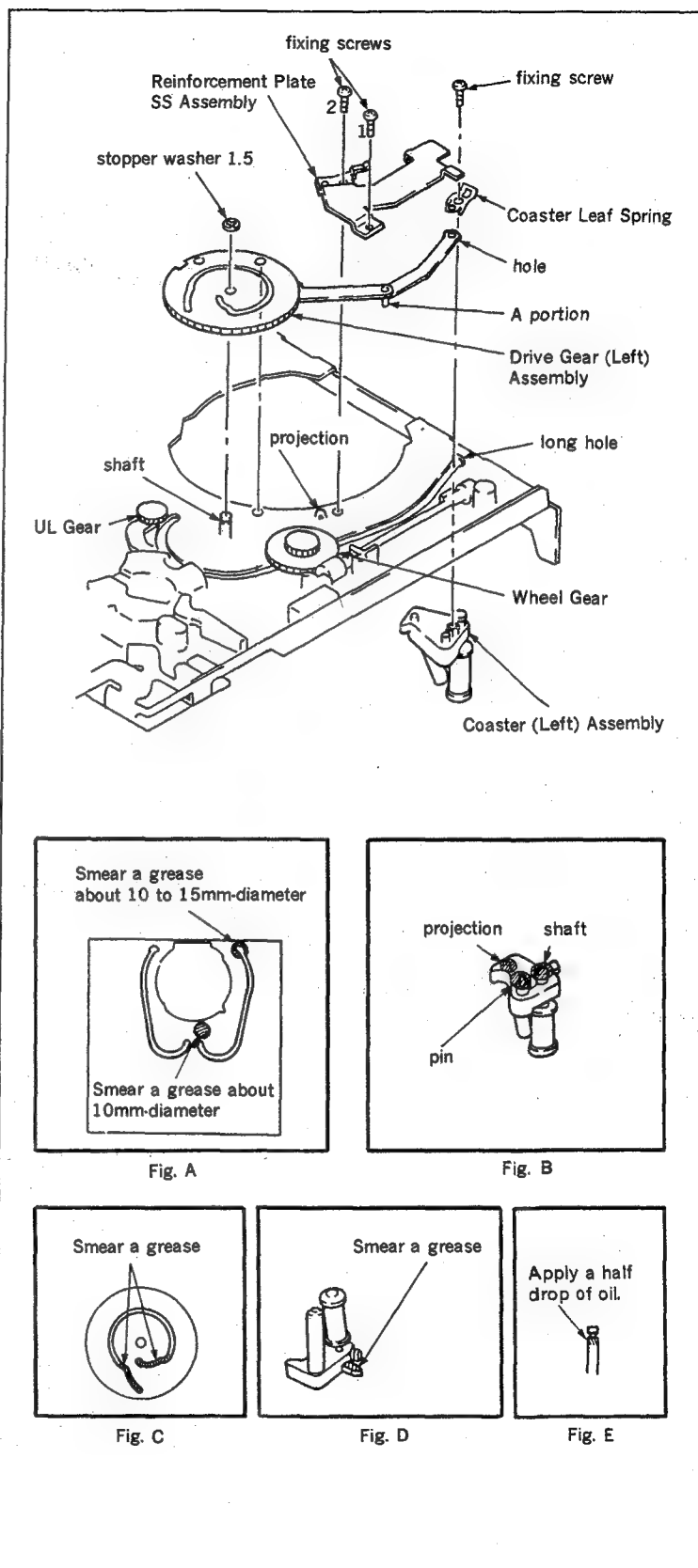
- (1) Remove the Capstan Motor referring to Section 3-3.
- (2) Remove the Drum Assembly referring to Section 3-14.
- (3) Remove the Switch Lever Assembly and Pinch Sub Arm Assembly referring to Section 3-16.
- (4) Remove the Timing Belt (L), RC Gear Assembly and Loading Lever Assembly referring to Section 3-17.
- (5) Remove the Coaster (Right) Assembly and Drive Gear (Right) Assembly referring to 3-20.
- (6) Remove two fixing screws and remove Reinforcement Plate SS Assembly.
- (7) Remove a fixing screw. Remove Coaster Leaf Spring and Coaster (Left) Assembly.
- (8) Remove stopper washer 1.5 and remove Drive Gear (Left) Assembly.

#### Installation :

- (1) Smear a grease to the mechanical chassis as shown in fig. A.
- (2) Apply a half drop of oil to the shaft. (Fig. E)
- (3) Smear a grease to the pin, shaft and projection of the Coaster (Left) Assembly. (Fig. B)
- (4) Install the pin and shaft of the Coaster (Left) Assembly to the longitudinal hole of the mechanical chassis.
- (5) Put the Drive Gear (Left) Assembly into the shaft and put the A portion into longitudinal hole. Install the gear portion so that the gear portion is engaged with Wheel Gear and UL Gear.

- (6) Put the hole of the Drive Gear (Left) Assembly to the pin of the Coaster (Left) Assembly.
- (7) Fasten the stopper washer 1.5.
- (8) Put the Coaster Leaf Spring to the shaft and pin of the Coaster (Left) Assembly and install it with fixing screw. At this time, the tightening torque of the fixing screw is about  $0.05 \text{ N}\cdot\text{m}$  {500gf·cm}. If tightened too much, the Coaster (Left) Assembly and Coaster Leaf Spring will be damaged.
- (9) Put the Reinforcement Plate SS Assembly to the projection of chassis and tighten the two fixing screws in order.
- (10) Smear a grease as shown in figures C and D.
- (11) Install the Coaster (Right) Assembly and Drive Gear (Right) Assembly referring to Section 3-20.
- (12) Install the Timing Belt (L), RC Gear Assembly and Loading Lever Assembly referring to Section 3-17.
- (13) Install the Switch Lever Assembly and Pinch Sub Arm Assembly referring to Section 3-16.
- (14) After putting the unit into the **ULD** mode, install the Drum Assembly referring to Section 3-14.
- (15) Install the Capstan Motor referring to Section 3-3.

**Note:** After replacement, perform the Tape Path Adjustment referring to Section 5.



### 3-22. REPLACEMENT OF LOADING MOTOR, BRAKE RELEASE ARM, WHEEL GEAR AND WORM ASSEMBLY

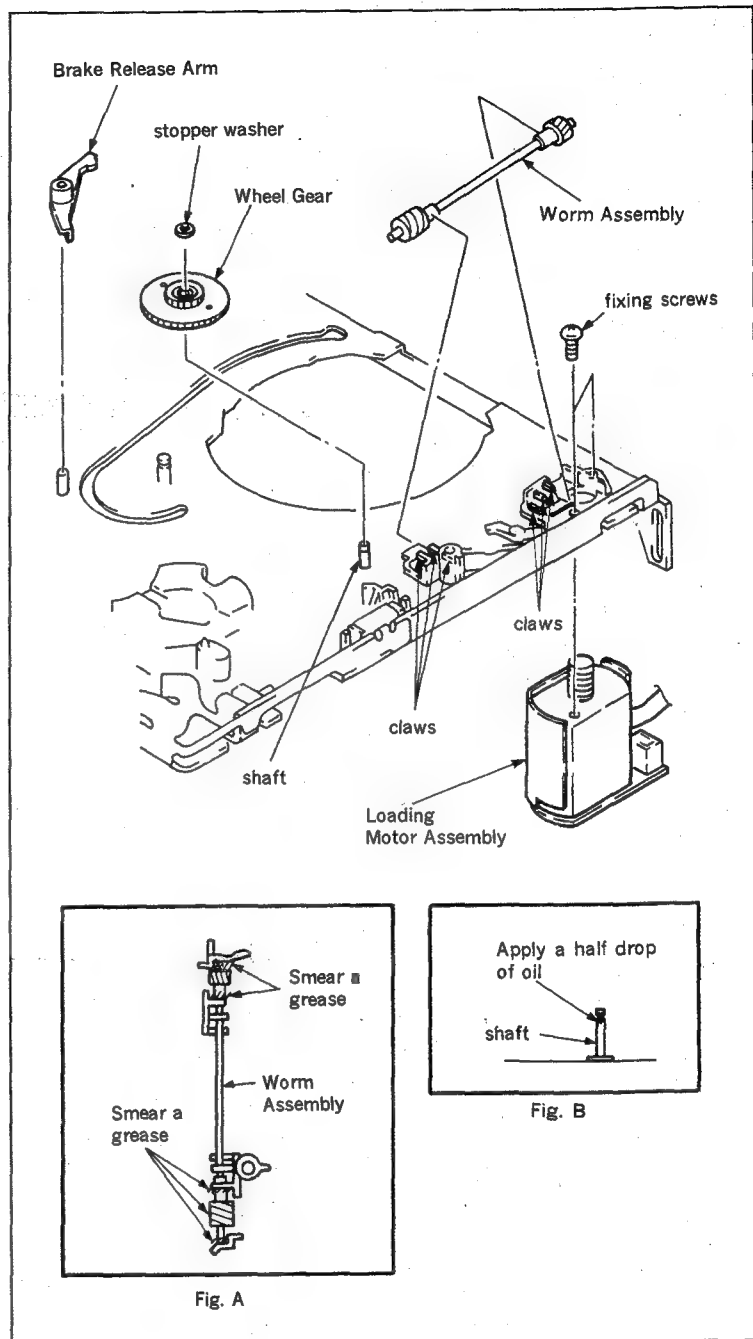
**Tool :** Mode Selector  
Sony Oil  
Sony Grease

#### Removal :

- (1) Remove the Capstan Motor referring to Section 3-3.
- (2) Remove the Switch Lever Assembly and Pinch Sub Arm Assembly referring to Section 3-16.
- (3) Remove the Timing Belt (L), RC Gear Assembly and Loading Lever Assembly referring to Section 3-17.
- (4) Remove the Drive Gear (Right) Assembly referring to Section 3-20.
- (5) Remove the Drive Gear (Left) Assembly referring to Section 3-21.
- (6) Remove two fixing screws and remove Loading Motor Assembly.
- (7) Remove Brake Release Arm.
- (8) Remove stopper washer and remove Wheel Gear.
- (9) Remove Worm Assembly from six claws.

#### Installation :

- (1) Install the Worm Assembly to the six claws.
- (2) Smear a grease to the five shaded portions of the Worm Assembly. (Fig. A)
- (3) Apply a half drop of oil to the shaft. (Fig. B)
- (4) Put the Wheel Gear to the shaft. Engage it with the gear of the Worm Assembly.
- (5) Install the Brake Release Arm.
- (6) Smear a grease to the whole gear portion of the Loading Motor Assembly.
- (7) Install the Loading Motor Assembly to the mechanical chassis with the two fixing screws.
- (8) Install the Drive Gear (Left) Assembly referring to Section 3-21.
- (9) Install the Drive Gear (Right) Assembly referring to Section 3-20.
- (10) Install the Timing Belt (L), RC Gear Assembly and Loading Lever Assembly referring to Section 3-17.
- (11) Install the Switch Lever Assembly and Pinch Sub Arm Assembly referring to Section 3-16.
- (12) After putting the unit into the **ULD** mode, install the Capstan Motor referring to Section 3-3.





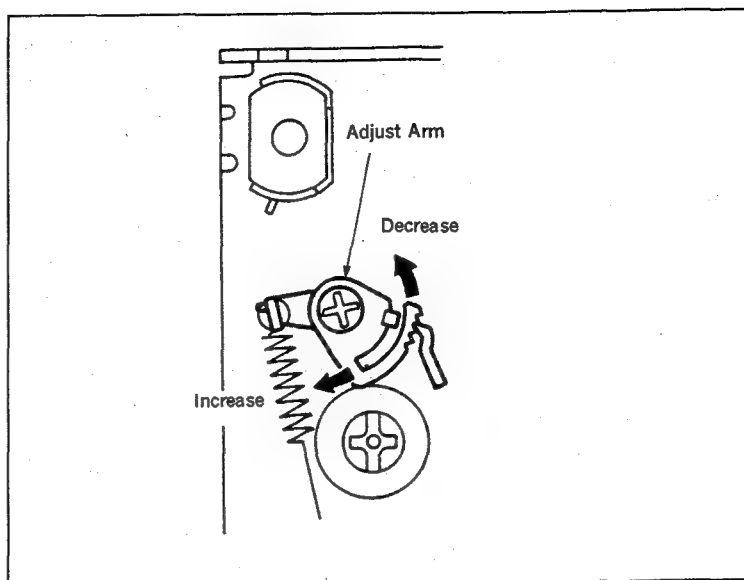


## SECTION 4

### TORQUE AND BACK TENSION ADJUSTMENT

#### 4-1. FWD BACK TENSION ADJUSTMENT

- (1) Insert a torque cassette to the unit.
- (2) Put the unit into the PLAY mode. Check that the torque reading of S Reel Table meets required specification.  
Spec.  $0.9 \times 10^{-3}$  to  $1.3 \times 10^{-3}$  N·m  
{9 to 13 gf·cm}
- (3) If the torque reading does not meet the required specification, adjust the Adjust Arm.



#### 4-2. CHECK OF REEL TORQUE

##### • Setting of REV mode

Press PLAY button and then, press REW button continuously.

- (1) Insert a torque cassette to the unit.
- (2) Put the unit into the PLAY mode and check that the torque reading of T Reel Table meets required specification.  
Spec.  $0.7 \times 10^{-3}$  to  $1.5 \times 10^{-3}$  N·m  
{7 to 15 gf·cm}
- (3) Put the unit into the REV mode and check that the torque reading of the S Reel Table meets required specification.  
Spec.  $2.3 \times 10^{-3}$  to  $3.5 \times 10^{-3}$  N·m  
{23 to 35 gf·cm}
- (4) Put the unit into the REV mode and check that the torque reading of the T Reel Table meets required specification.  
Spec.  $1.3 \times 10^{-3}$  to  $2.5 \times 10^{-3}$  N·m  
{13 to 25 gf·cm}
- (5) If the readings do not meet the required specifications, replace each Reel Table.

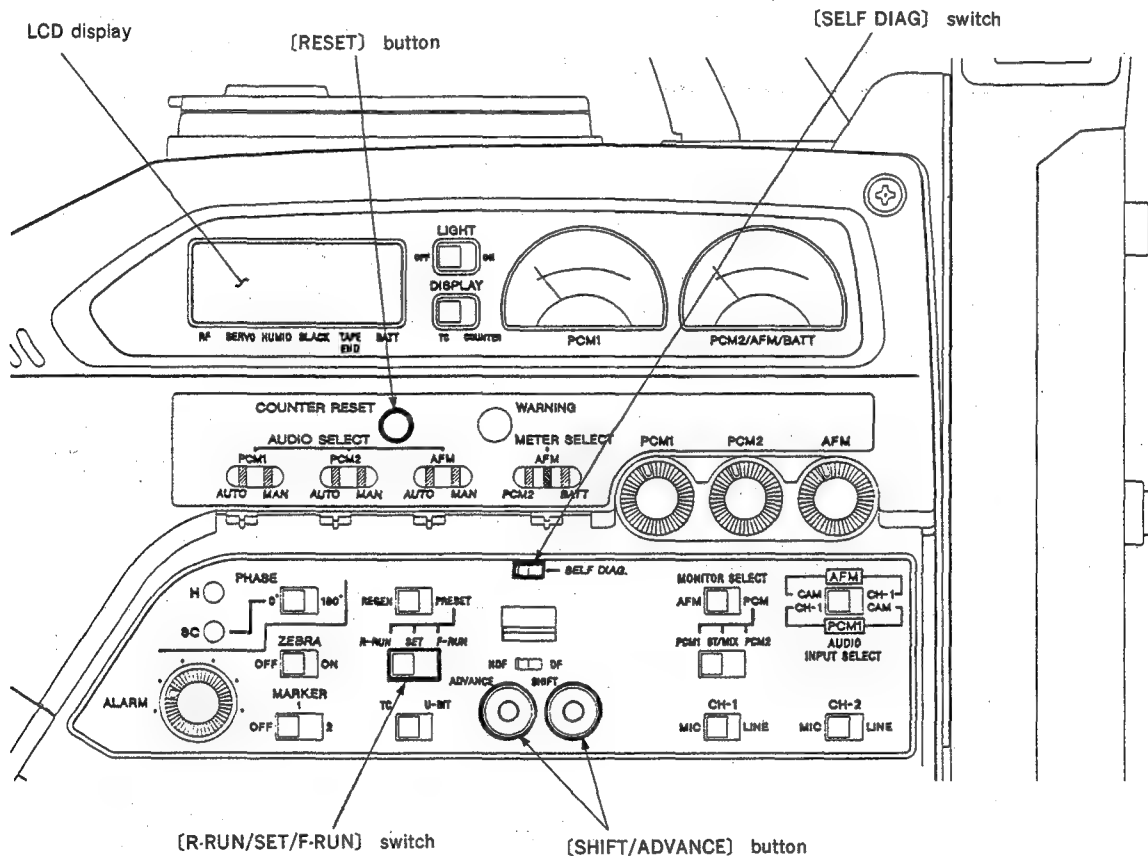
## SECTION 5 TAPE PATH ADJUSTMENT

### Alignment Information

#### [Track Shift]

8mm Video System employs a high precision tracking ATF (Automatic Track Finding) System which instantaneously controls tape running speed with four kinds of pilot signals. In this way, Tracking Adjustment Knob is unnecessary and it is possible to trace with accuracy. On the other hand, the adjustment of Tape Path System was difficult in the ATF System. It was impossible to adjust perfectly because the ATF System is automatically corrected even when it small miss-tracking occurs. When perform Tracking Fine Adjustment, put into the Track Shift mode. The Track Shift mode can forcibly operate the ATF System and can shift the constant tracking amount about one-fifth. Therefore, the Tracking Fine Adjustment can perform easily. Track Shift Tool is not required.

#### Setting Procedures of Track Shift Mode



1. Turn on the [SELF DIAG] switch on the operation panel of the Side Panel.
2. Set the [R-RUN/SET/F-RUN] switch to [SET] position.
3. Select the menu [105] with the [SHIFT] or [ADVANCE] button.

105 00

(LCD display)

4. Set the [R-RUN/SET/F-RUN] switch to [R-RUN] position.
5. Select the data [11] by pressing the [SHIFT] button once.

105 11

(LCD display)

6. Press the [RESET] button to set data.

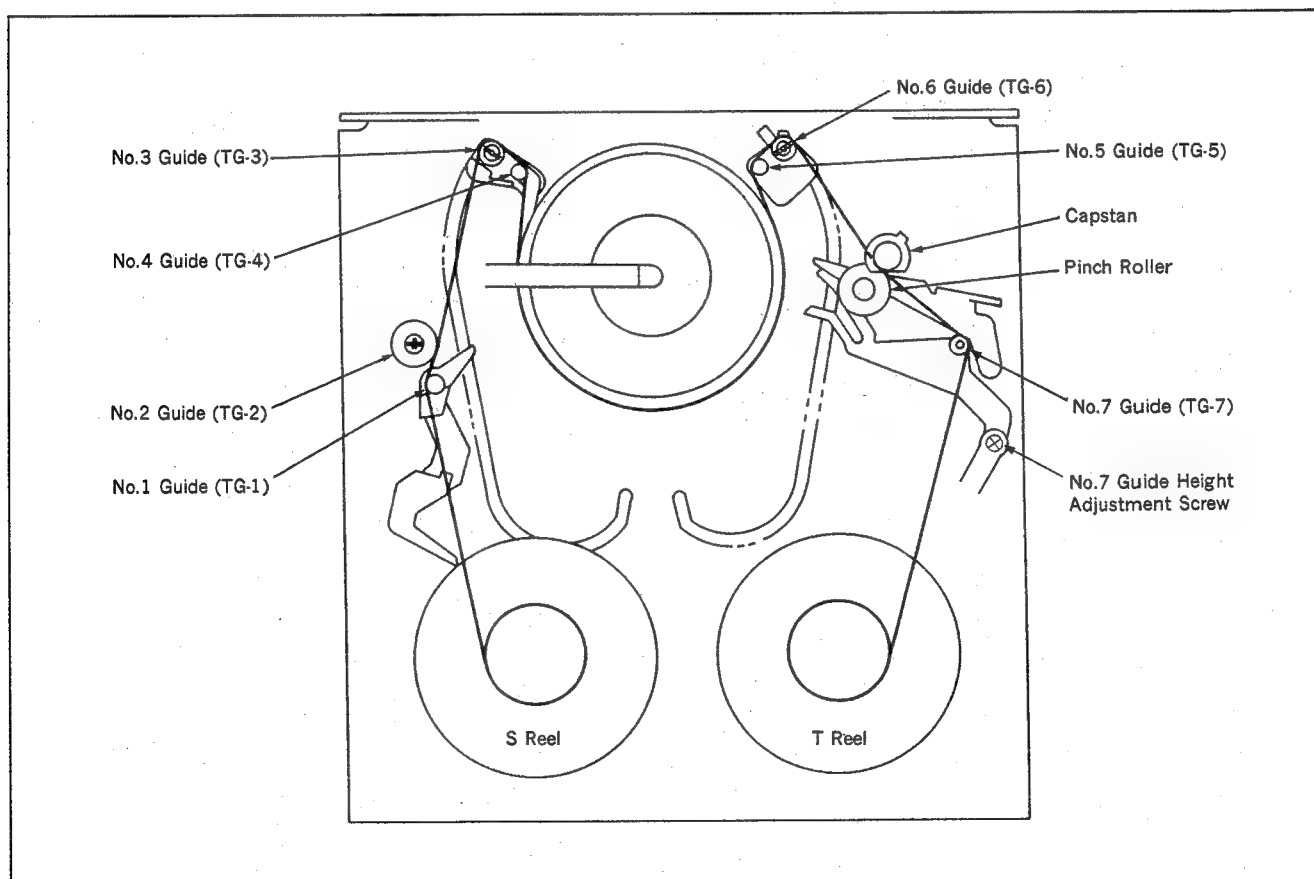
After the TRACKING FINE ADJUSTMENT is completed, be sure to reset the mode as follows.

1. Turn off the [SELF DIAG] switch.
2. Turn off the power momentarily.

#### [Tape Guide Adjustment]

There are four Adjustment Guides as TG-2, 3, 6, and 7 Guides. If you want to adjust each guide, turn the Adjustment Screw as follows.

Guide	Adjustment Screw	Guide Adjustment
TG-2, 3, 6	Counter-clockwise	UP
	Clockwise	Down
TG-7	Counter-clockwise	Down
	Clockwise	Up

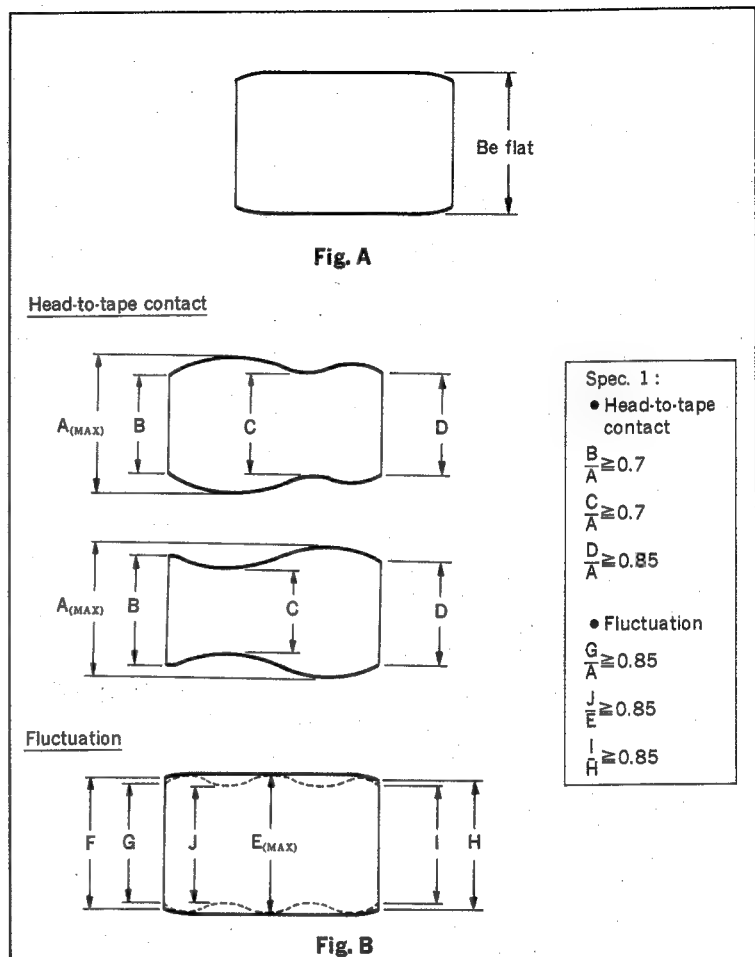


## 5-1. PREPARATION FOR ADJUSTMENT

**Tool :** Oscilloscope  
Alignment tape for tracking  
(WR5-1NP)

### Adjustment procedure :

- (1) Clean tape path surfaces as Tape Guides, Drum, Capstan Shaft and Pinch Roller.
- (2) Connect the oscilloscope as follows.  
CH-1 : CN24 pin 1/MB-384 Board  
CH-2 : CN24 pin 3/MB-384 Board  
TRIG : CH-2
- (3) Play back the alignment tape.
- (4) Check that the RF waveform of both entrance and exit sides are flat. (Fig. A)
- (5) Set the Track Shift mode.
- (6) Check that the form and fluctuation of the RF waveform meet the specification 1. (Fig. B)
- (7) If do not meet the specifications at step (4) and (6), adjust as follows.



## 5-2. TRACKING ADJUSTMENT

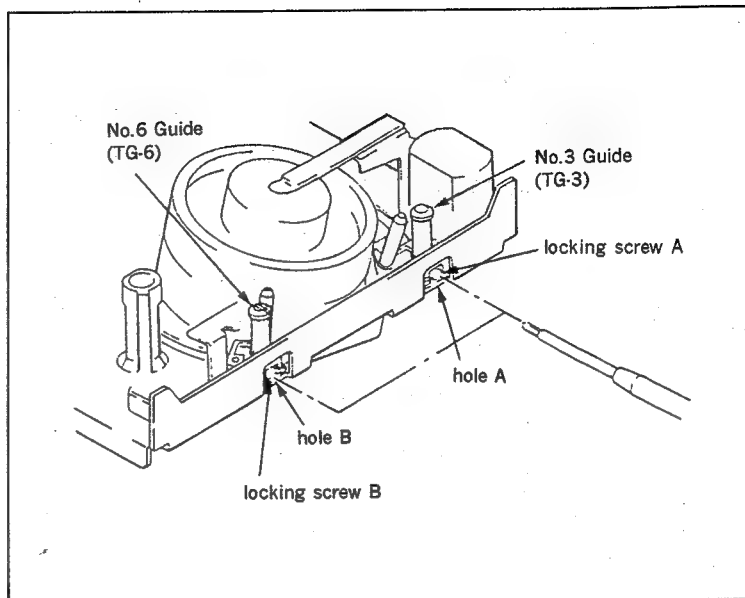
**Tool:** Oscilloscope

Alignment tape for tracking  
(WR5-1NP)

### Adjustment procedure:

- (1) Pull out the Mechanical Deck Block.
- (2) Play back the alignment tape.
- (3) Put a precision screwdriver into hole A and loosen locking screw A a little. Turn No. 3 Guide (TG-6) and flatten the waveform of entrance side.
- (4) Put a precision screwdriver into hole B and loosen locking screw B a little. Turn No. 6 Guide (TG-6) and flatten the waveform of exit side.

**Note:** Be careful not to turn the locking screws so much or the guides will move easily.



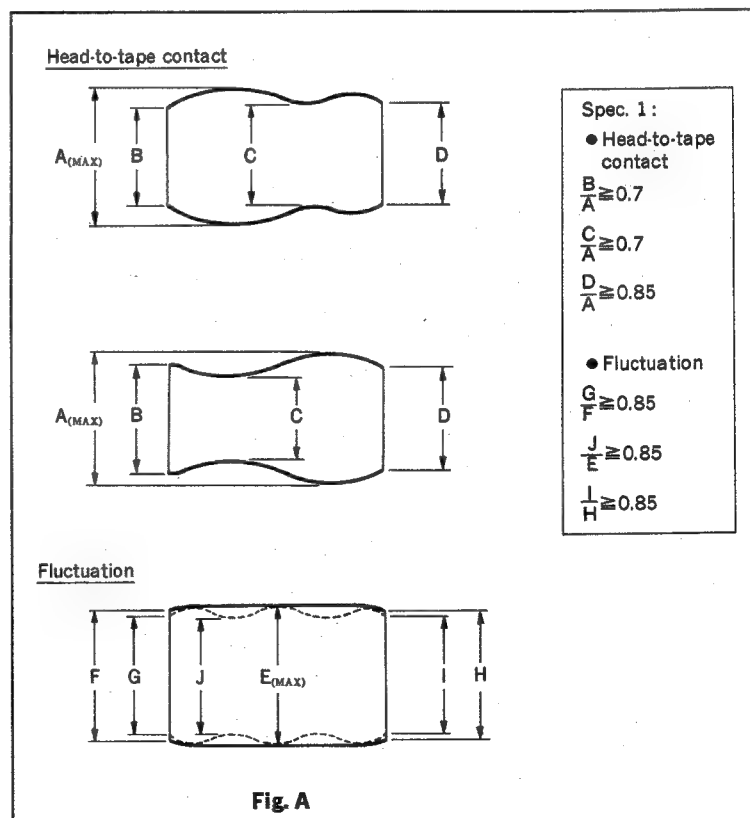
## 5-3. TRACKING FINE ADJUSTMENT

**Tool:** Oscilloscope

Alignment tape for tracking  
(WR5-1NP)  
Cassette tape (E6-120ME)

### Adjustment procedure:

- (1) Set the Track Shift mode.
- (2) Play back the alignment tape.
- (3) Perform Tape Entrance Side Adjustment.
  - (i) Turn the No. 3 Guide so that the form and fluctuation of the RF waveform meet specification 1. (Fig. A)
  - (ii) Tighten locking screw A. Check that the waveform of entrance side does not change.



- (4) Perform Tape Exit Side Adjustment.  
 (i) Turn the No. 6 Guide so that the form and fluctuation of the RF waveform meet specification 1. (Fig. A)

When the RF waveform of exit side is flat.

- (ii) Turn the No. 6 Guide clockwise a little and adjust the waveform as shown in fig. B.  
 (iii) Tighten locking screw B. Check that the waveform of exit side does not change.  
 (5) Perform Waveform Check of the Selfrecording and Play Back.  
 (i) Eject the alignment tape.  
 (ii) Perform the recording with no signal to the cassette tape which part is between tape top and tape middle.  
 (iii) Check that the form and fluctuation of the RF waveform meet specification 2. (Fig. C)  
 If do not meet the specification, perform steps (2) to (4) again.  
 (6) After adjustment, perform Section 5-7. Check After Adjustment.

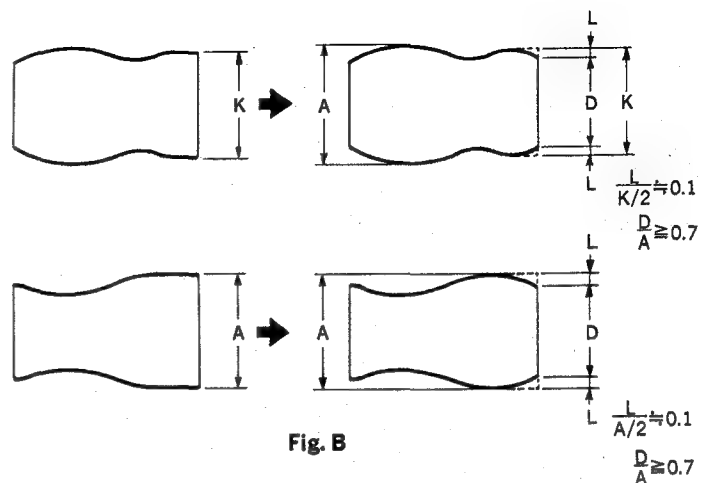
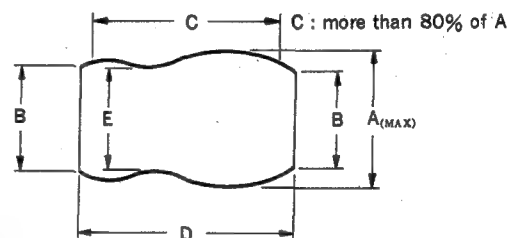


Fig. B

Head-to-tape contact



Fluctuation



Spec. 2:

- Head-to-tape contact  $\frac{B}{A} \geq 0.7$   $\frac{C}{D} \geq 0.8$   $\frac{E}{A} \geq 0.8$
- Fluctuation  $\frac{G}{F} \geq 0.9$   $\frac{J}{H} \geq 0.9$

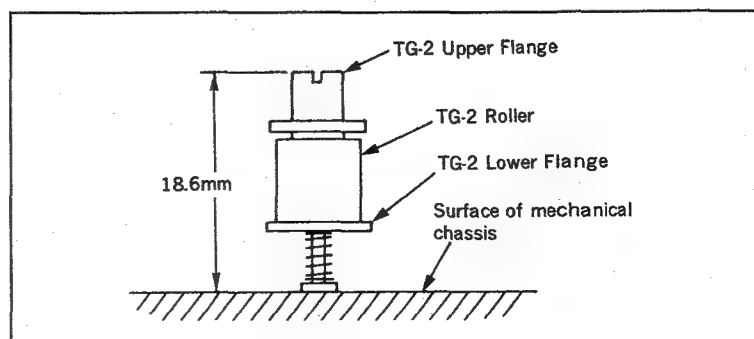
Fig. C

#### 5-4. No. 2 GUIDE ADJUSTMENT

When turning or replacing No. 2 Guide, adjust after performing No. 2 Guide (TG-2) Height Preset.

##### 5-4-1. No. 2 Guide (TG-2) Height Preset

- (1) Turn TG-2 Upper Flange and adjust the height of the TG-2 as shown in the figure.



#### 5-4-2, No. 2 Guide (TG-2) Adjustment

**Tool :** Oscilloscope

Alignment tape for tracking

(WR5-1NP)

Cassette tape (E6-120ME)

Small adjustment mirror

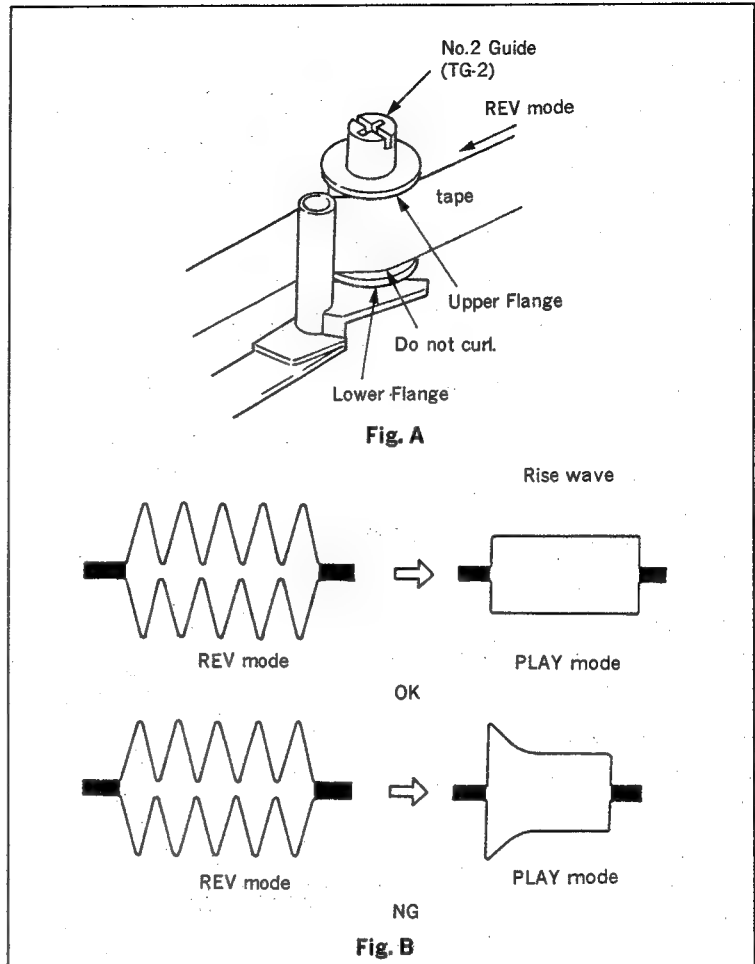
**Note :** Setting of REV mode and CUE mode are as follows.

**REV mode :** While pressing PLAY button, press REW button. If removing a hand from the REW button, the unit returns to the PLAY mode.

**CUE mode :** While pressing PLAY button, press F FWD button. If removing a hand from the F FWD button, the unit returns back to the PLAY mode.

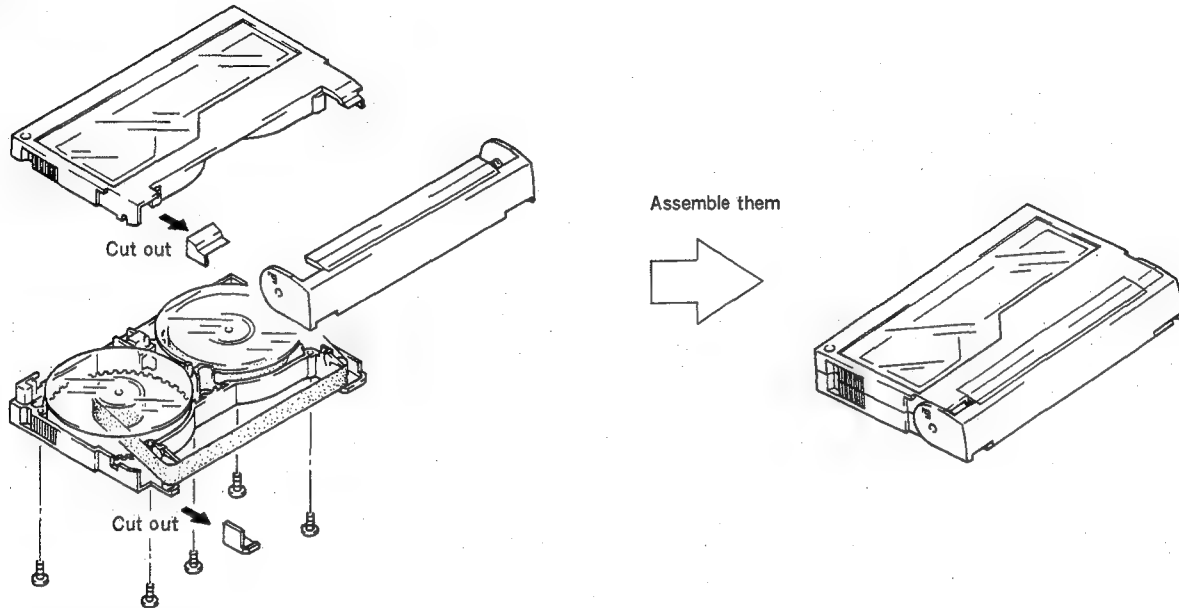
**Adjustment procedure :**

- (1) Play back a cassette tape and put into the REV mode.
- (2) Check that the tape does not curl at the lower flange of the No. 2 Guide. (Fig. A) If the tape curls, turn the upper flange of the No. 2 Guide clockwise with a screwdriver and lower the guide until the tape curl disappears.
- (3) Play back the alignment tape.
- (4) Perform the Tracking Adjustment and Tracking Fine Adjustment referring to Section 5-2 and 5-3.
- (5) Put into the Track Shift mode and play back after the CUE/REV mode. Check that the RF waveform recovers flatly within two seconds.
- (6) If the RF waveform does not recovers flatly (Fig. B), turn the upper flange of the No. 2 Guide (TG-2) counterclockwise at 90 degrees. Perform step (5) again.
- (7) Repeat steps (5) and (6) until the correct waveform can be obtain. At this time, check that the tracking waveform has not changed.
- (8) If the tracking waveform has changed, perform the Entrance Side Tracking Fine Adjustment and perform step (5) again.



### 5-5. No. 7 GUIDE (TG-7) ADJUSTMENT

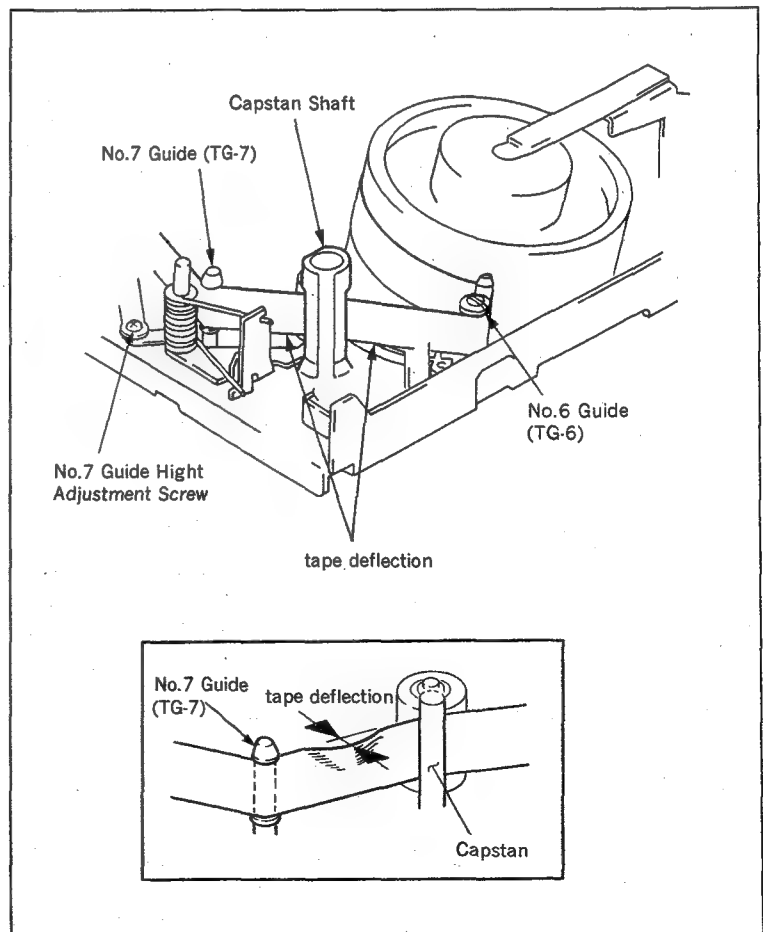
- The No. 7 Guide (TG-7) Height Adjustment Screw is away from the No. 7 (TG-7) Guide. Refer to Alignment Information. Therefore, modify a cassette tape (E6-120ME) as shown in the figure and it is possible to adjust the No. 7 Guide in the PLAY mode.



**Tool:** Modified cassette tape (E6-120ME)  
Small adjustment mirror

#### Adjustment procedure:

- (1) Play back the modified cassette tape which has been backed twenty minutes from tape end and put into the REV mode.
- (2) Check that the tape deflection between the No. 6 Guide (TG-6) and Capstan Shaft is less than 0.5 mm. If it is more than 0.5 mm, turn and adjust the No. 7 Guide (TG-7) Height Adjustment Screw.
- (3) Play back the modified cassette tape again and check that the tape deflection between the No. 7 Guide (TG-7) and Capstan Shaft is less than 0.5 mm. If it is more than the 0.5 mm, turn and adjust the No. 7 Guide (TG-7) Height Adjustment Screw. When putting into the REV mode, check that the tape deflection between the No. 6 Guide (TG-6) and Capstan Shaft is less than 0.5 mm.



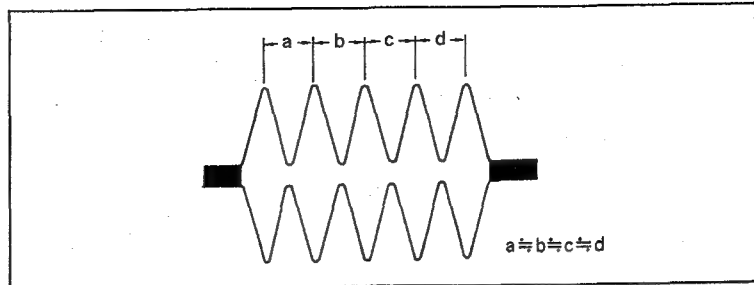


## 5-6. CHECK OF CUE AND REV WAVEFORMS

**Tool :** Oscilloscope  
Alignment tape for tracking  
(WR5-1NP)

### Adjustment procedure :

- (1) Play back the alignment tape and put into the REV mode. In this time, check that the pitches of the waveform are uniform more than five seconds as shown in the figure. If not, perform Section 5-3. Tracking Fine Adjustment and Section 5-5. No.7 Guide (TG-7) Adjustment.
- (2) Put into the CUE mode. In this time, check that the pitches of the waveform are uniform more than five seconds as shown in the figure. If not, perform Section 5-3. Tracking Fine Adjustment.

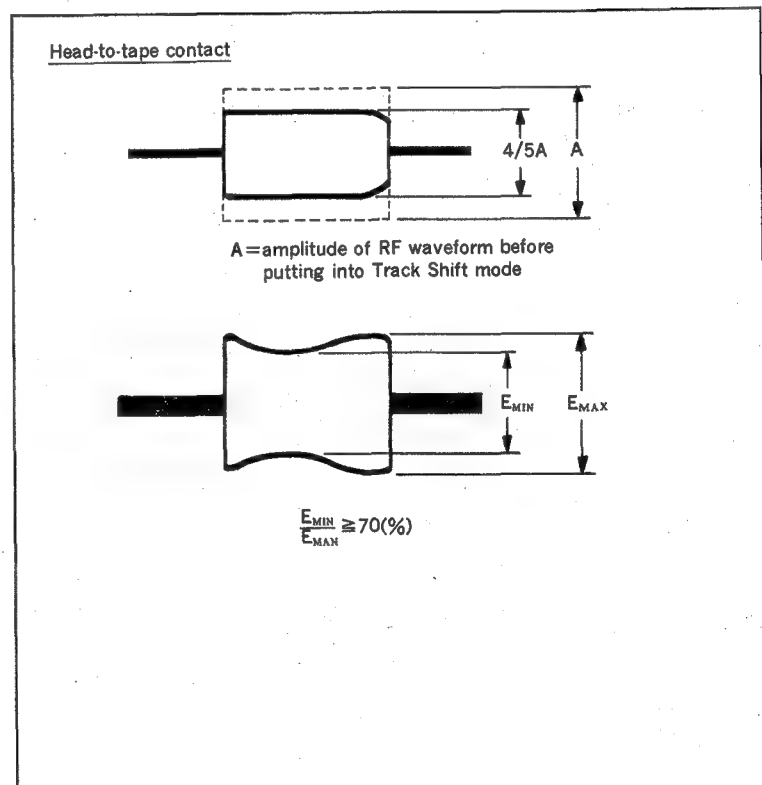


## 5-7. CHECK AFTER ADJUSTMENT

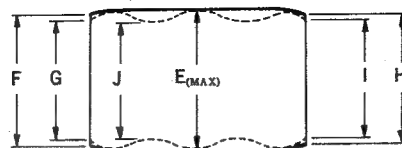
**Tool :** Oscilloscope  
Alignment tape for tracking  
(WR5-1NP)

### 5-7-1. Tracking Check

- (1) When putting into the Track Shift mode, check that the amplitude of the RF waveform is about four-fifth as shown in the figure.
- (2) In this time, check that amplitude minimum value ( $E_{min}$ ) is more than 70% of maximum value ( $E_{max}$ ) as shown in the figure.
- (3) Check that the fluctuation of the RF waveform is as shown in the figure.



### Fluctuation

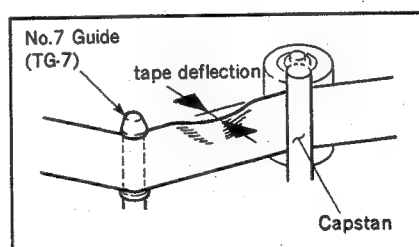
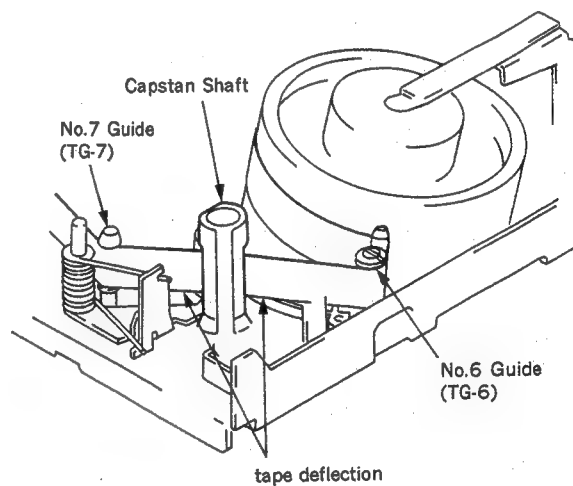


Fluctuation	$\frac{G}{F} \geq 0.85$	$\frac{J}{E} \geq 0.85$	$\frac{I}{H} \geq 0.85$
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### 5-7-2. Recovery Check of Waveform

**Tool:** Oscilloscope  
 Alignment tape for tracking  
 (WR5-1NP)  
 Small adjustment mirror

- (1) Play back the alignment tape.
- (2) Put the Track Shift mode to OFF.
- (3) Put into the EJECT mode and perform threading again.
- (4) Put into the PLAY mode and check that the RF waveform recovers flatly within 2.5 seconds. Then check that there is no tape deflection around the Pinch Roller.
- (5) Play back the alignment tape after putting into the CUE/REV or FF/REW mode. Check that the RF waveform recovers flatly within 2.5 seconds. Then check that there is no tape deflection around the Pinch Roller.
- (6) Repeat steps (3) to (5).



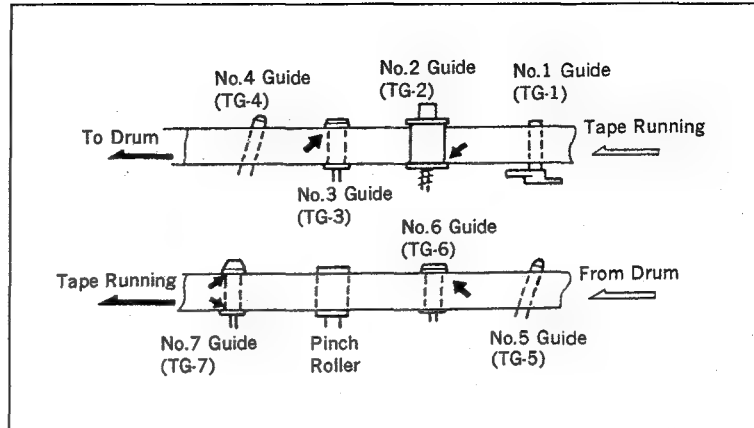
### 5-7-3. Tape Running Check

**Tool:** Cassette tape (E6-120ME)  
Small adjustment mirror

- (1) When playing back a cassette tape, check that the tape runs without space between tape and guide flange and tape curling (more than 0.3 mm) do not exist at five positions.

Lower flange of No. 2 Guide  
Upper flange of No. 3 Guide  
Upper flange of No. 6 Guide  
Lower and upper flanges of No. 7

- (2) When putting into the CUE mode or REV mode, check that the tape runs without space between tape and guide flange and tape curling (more than 0.3 mm) do not exist at each flange of the guide.

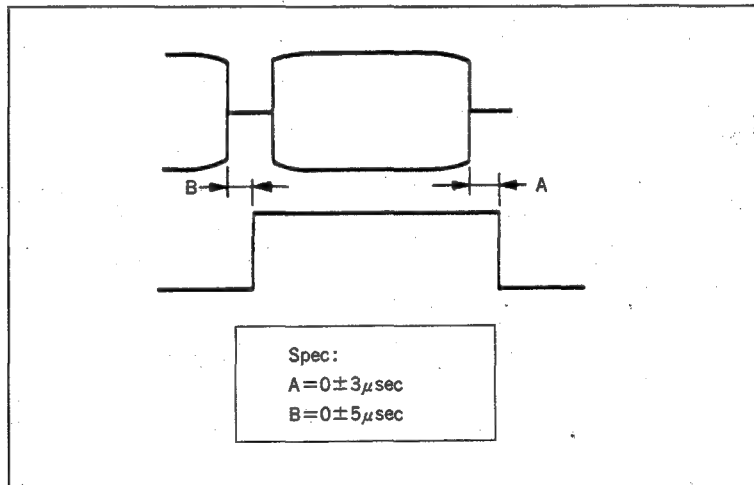


### 5-8. SWITCHING POSITION ADJUSTMENT

**Tool:** Oscilloscope  
Alignment tape for switching position adjustment (WR2-3NS)

#### Adjustment procedure:

- (1) Connect the oscilloscope as follows.  
CH-1: CN24 pin-1/MB-384 Board  
CH-2: CN24 pin-3/MB-384 Board  
Trigger: CH-2
- (2) Connect TP502 on the FP-40 to ground with a shorting clip.
- (3) Turn on the [SELF DIAG] switch on the operation panel of the Side Panel.
- (4) Set the [R-RUN/SET/F-RUN] switch to [SET] position and select the menu [101] by pressing the [SHIFT] button once.
- (5) Play back the alignment tape.
- (6) Adjust switching position with [R-RUN/SET/F-RUN] switch to meet specification A.  
Set the switch to [F-RUN] position for coarse adjustment.  
Set the switch to [R-RUN] position for fine adjustment. Variable minimum unit is 1  $\mu\text{sec}$  with the switch set to [R-RUN] position.
- (7) Check that it meets specification B within specification A.
- (8) After adjustment, press the [COUNTER RESET] button, and turn off the [SELF DIAG] switch on the Side Panel, and lastly disconnect a shorting clip.

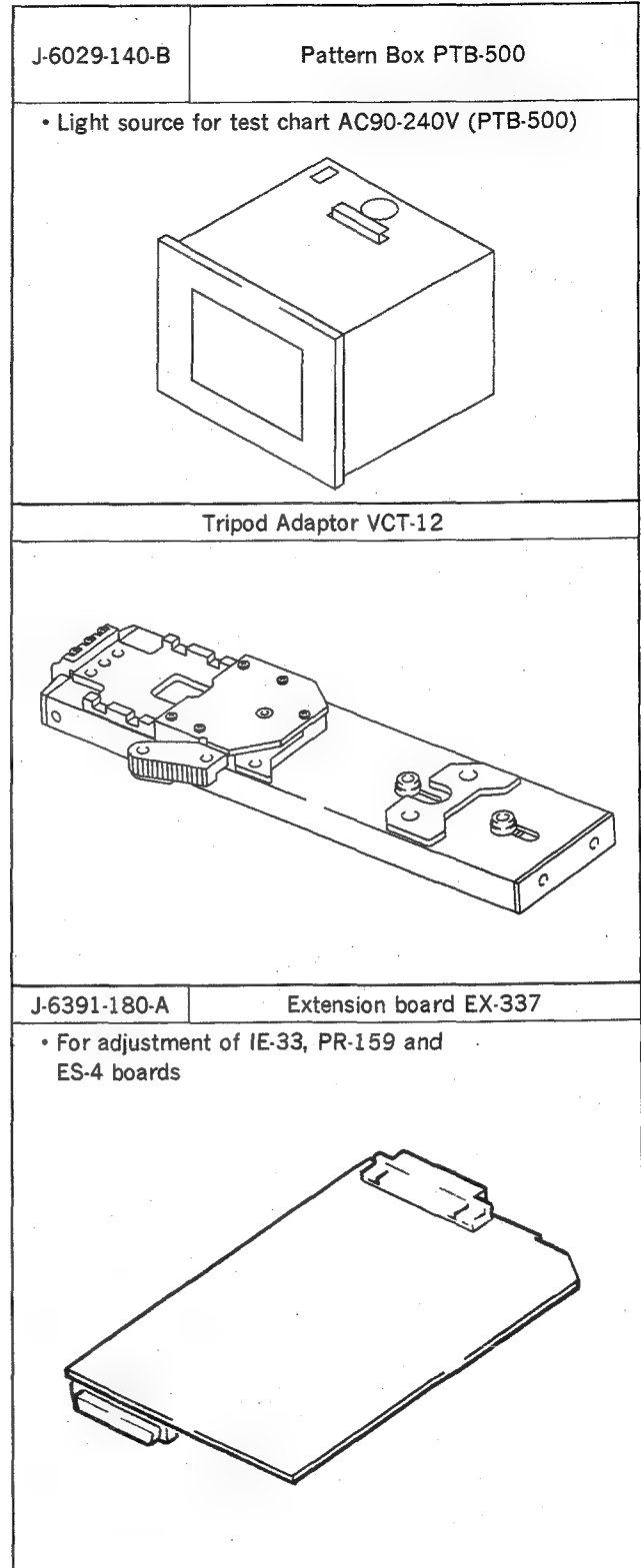
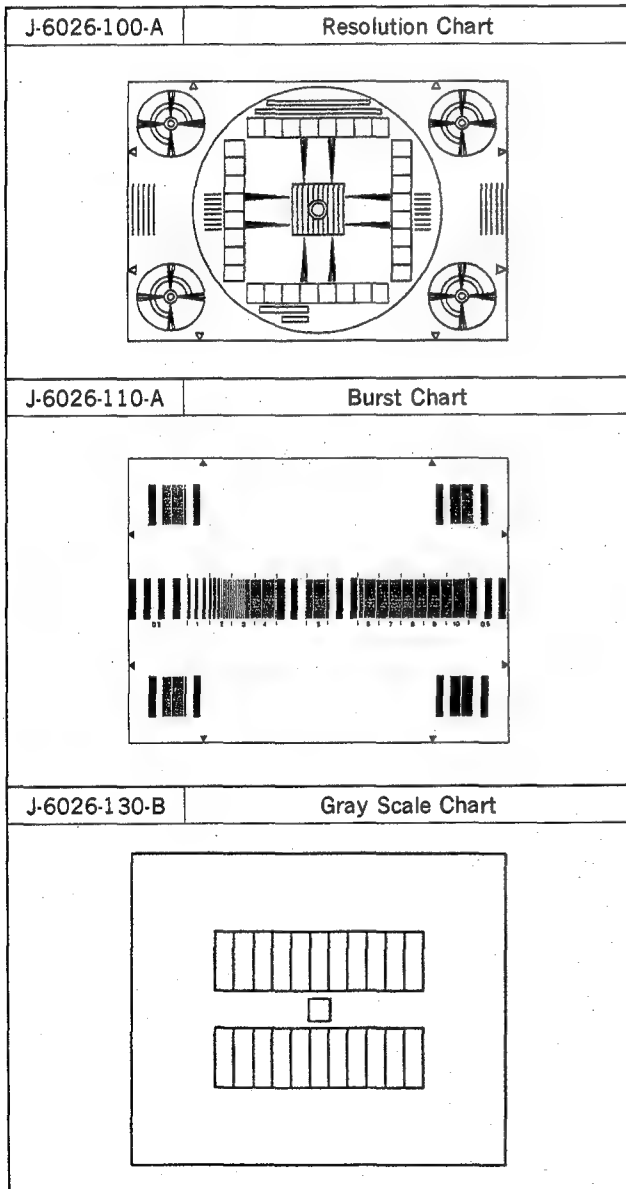


## SECTION 6 CAMERA ALIGNMENT

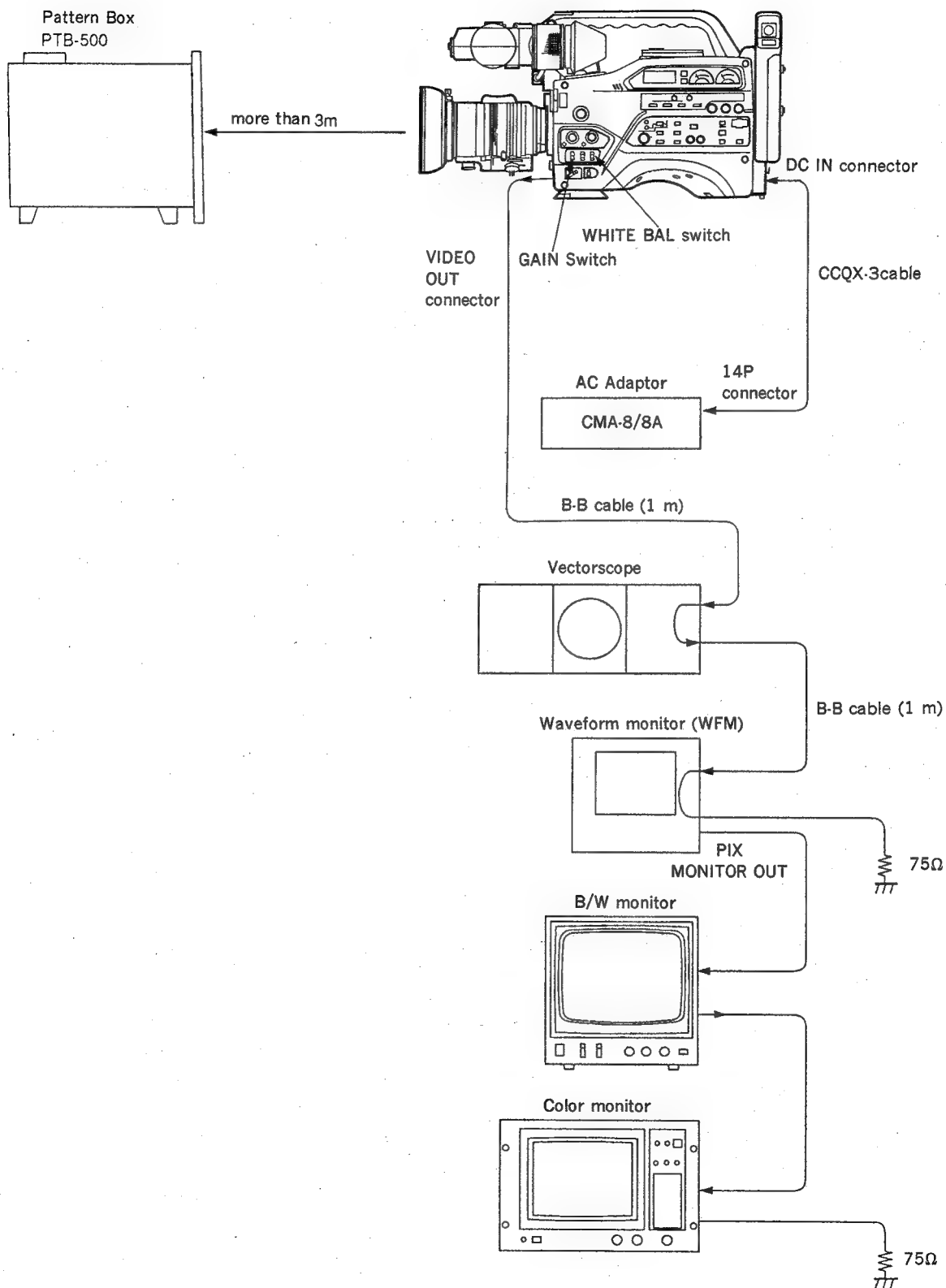
### 6-1. Preparation

#### 6-1-1. EQUIPMENT REQUIRED

- Digital voltmeter
- Oscilloscope (100 MHz or more)
- Vectorscope
- Waveform monitor
- B/W monitor (Sony PVM-91/122 or equivalent)
- Color monitor (Sony PVM-1320 or equivalent)
- AC adaptor (Sony CMA-8/8A)
- Frequency counter



## 6-1-2. CONNECTION



### 6-1-3. SWITCH SETTING BEFORE ADJUSTMENT

Switch Setting of the camera side panel

GAIN switch : 0dB  
OUTPUT switch : CAM  
WHITE BAL switch : PRESET  
FILTER knob : 1  
SHUTTER switch : OFF

IRIS(Lens): Manual  
ZOOM(Lens): Manual

IE-33 Board  
S1(CB 75%/100%): 75%

ES-4 Board  
S1(VTR↔TEST): VTR (Upper side)

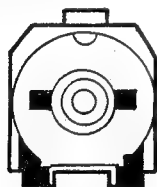
AT-70 Board  
S1(FRM/FLD): FLD  
S2(FULL FUNC/OPE): OPE  
S3(OPE/KNEE HI): OPE  
S4(ADJ/OPE): ADJ

**Note :** After the adjustment, return the S4(ADJ/OPE)/AT-70 board to "OPE" position.

### 6-1-4. Note on adjustment

#### Note

(1) As the following adjusting control has no turning stopper, take care not to over-turn it.



(TOP VIEW)

Potentiometer  
Mechanical center condition

- (2) Before adjustment, be sure to allow for 10-minute warm-up time.
- (3) If the amplitude level of the measured waveform is blurred on the waveform monitor screen, set the RESPONSE switch on the waveform monitor to "LUM" mode.

### 6-1-5. ADJUSTMENT ITEM

- 6-2. CCD DRIVE SYSTEM ADJUSTMENT
  - 6-2-1. G/R/B V SUBSTRATE VOLTAGE ADJUSTMENT
  - 6-2-2. G/R/B RG VOLTAGE ADJUSTMENT
- 6-3. SYNC SIGNAL SYSTEM ADJUSTMENT
  - 6-3-1. SUB-CARRIER FREQUENCY ADJUSTMENT
- 6-4. ENCODER SYSTEM ADJUSTMENT
  - 6-4-1. COLOR-BAR 75%/100% ADJUSTMENT
  - 6-4-2. CARRIER BALANCE ADJUSTMENT
  - 6-4-3. COLOR-BAR SIZE ADJUSTMNT
  - 6-4-4. INT CB Y ADJUSTMENT
  - 6-4-5. COLOR VECTOR ADJUSTMNT
  - 6-4-6. MATRIX ADJUSTMENT
- 6-5. VIDEO PROCESS SYSTEM ADJUSTMENT
  - 6-5-1. 1H OUT BALANCE ADJUSTMENT
  - 6-5-2. 2H OUT BALANCE ADJUSTMENT
  - 6-5-3. 1H GAIN ADJUSTMENT
  - 6-5-4. 2H GAIN ADJUSTMENT
  - 6-5-5. G-ch/B-ch/R-ch INPUT GAIN ADJUSTMENT
  - 6-5-6. G-ch GAIN/GAMMA/PED ADJUSTMENT
  - 6-5-7. R-ch/B-ch GAIN/PED ADJUSTMENT
  - 6-5-8. G-ch BLACK SET AND PEDESTAL ADJUSTMENT
  - 6-5-9. R-ch/B-ch BLACK SET AND PEDESTAL ADJUSTMNT
  - 6-5-10. KNEE ADJUSTMENT
  - 6-5-11. PRE KNEE ADJUSTMENT
  - 6-5-12. PR WHITE CLIP ADJUSTMENT
  - 6-5-13. ALIASING ADJUSTMENT
  - 6-5-14. APERTURE CRISPENING ADJUSTMENT
  - 6-5-15. Y<sub>H</sub> LEVEL ADJUSTMENT
  - 6-5-16. DTL CRISPENING ADJUSTMENT
  - 6-5-17. DTL ALIASING ADJUSTMENT
  - 6-5-18. H/V RATIO ADJUSTMENT
  - 6-5-19. DETAIL LEVEL ADJUSTMNT
  - 6-5-20. ES WHITE CLIP ADJUSTMENT
  - 6-5-21. ZEBRA LEVEL ADJUSTMNT
  - 6-5-22. AUTO IRIS ADJUSTMENT

## 6-2. CCD DRIVE SYSTEM ADJUSTMENT

### 6-2-1. G/R/B V SUBSTRATE VOLTAGE ADJUSTMENT

**Note :** Perform this adjustment only when replacing the adjusting control on the MB-384 board or replacing the mounted circuit board "MB-384" or replacing the front unit Assy. When the adjusting control on the MB-384 board was turned by accident, this adjustment is required.

Equipment: Digital voltmeter.

Adjustment Procedure

- Perform adjustment in order of G-ch, R-ch and B-ch as shown below.

MB-384 Board

	Test point (GND: E1)	Adjusting point
G-ch	TP4	RV4
R-ch	TP5	RV5
B-ch	TP6	RV6

Adjust to the V SUB voltage ( $\pm 0.2$  V) shown on the label sticking to the front unit Assy.

(Example)

	Vsub	RG
R	13.5	2.0
G	13.5	2.0
B	12.5	2.0

↑
↑  
Vdc                      Vdc

### 6-2-2. G/R/B RG VOLTAGE ADJUSTMENT

**Note :** Perform this adjustment only when replacing the adjusting control on the MB-384 board or replacing the mounted circuit board "MB-384" or replacing the front unit Assy. When the adjusting control on the MB-384 board was turned by accident, this adjustment is required.

Equipment: Oscilloscope

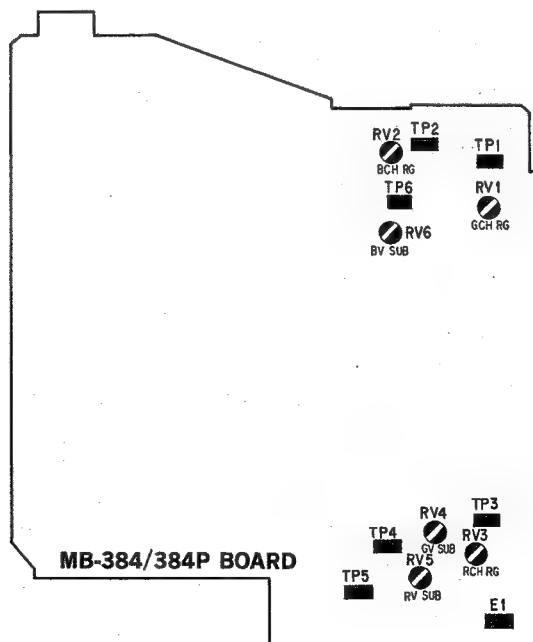
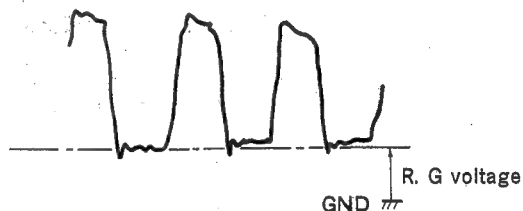
Adjustment Procedure

- Perform adjustment in order of G-ch, R-ch and B-ch as shown below.

MB-384 Board

	Test point (GND: E1)	Adjusting point
G-ch	TP1	RV1
R-ch	TP3	RV3
B-ch	TP2	RV2

Adjust to the RG voltage ( $\pm 0.2$  V) shown on the label sticking to the front unit Assy.



## 6-3. SYNC SIGNAL SYSTEM ADJUSTMENT

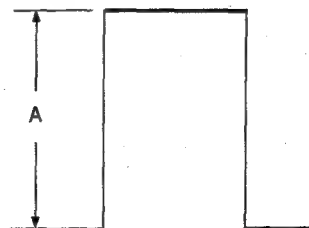
### 6-3-1. SUB-CARRIER FREQUENCY ADJUSTMENT

Equipment: Frequency counter  
 To be extended: ES-4 Board  
 Test point: TP5(GND: E1)/ES-4 Board  
 Adjusting point: ●RV15/ES-4 Board  
 Specification:  $3,579,545 \pm 10$  Hz

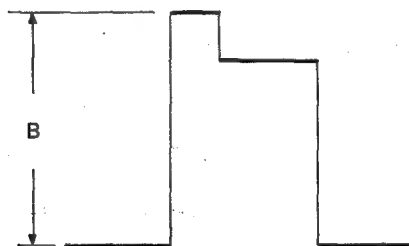
## 6-4. ENCODER SYSTEM ADJUSTMENT

### 6-4-1. COLOR-BAR 75%/100% ADJUSTMENT

Equipment: Oscilloscope  
 To be extended: IE-33 Board  
 Preparation: OUTPUT switch/camera side panel→BARS  
 Adjustment Procedure  
 1.S1(75%/100%)/IE-33 Board→75%  
 2.Test point: pin A19/extension board  
 Adjusting point: ●RV16/IE-33 Board  
 Specification:  $A = 0.75 \pm 0.01$  V

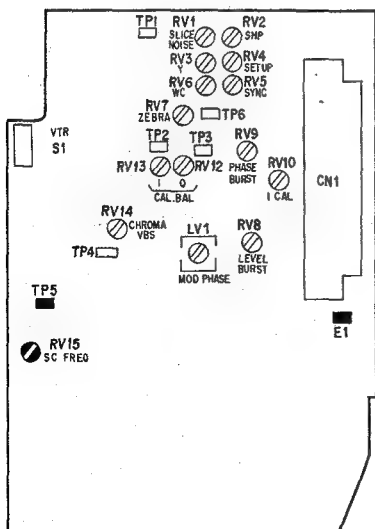


3.S1(75%/100%)/IE-33 Board→100%  
 4.Test point: pin A19/extension board  
 Adjusting point: ●RV17/IE-33 Board  
 Specification:  $B = 1.00 \pm 0.01$  V

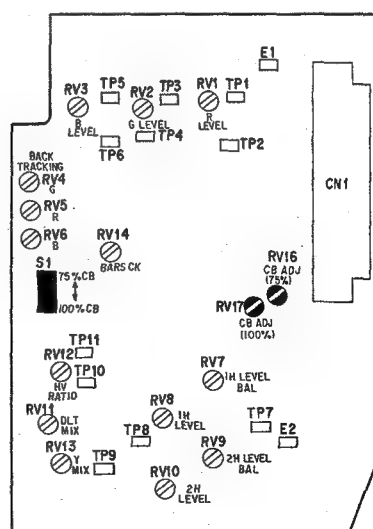


5.After the adjustment, return S1/IE-33 board to 75%.

ES-4/4P BOARD



IE-33/33P BOARD





## 6-4-2. CARRIER BALANCE ADJUSTMENT

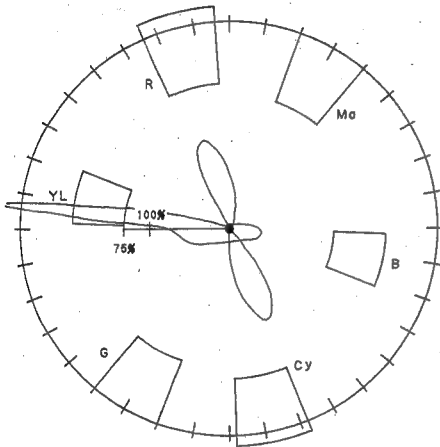
Equipment: Vectorscope (MAX GAIN)

To be extended: ES-4 Board

Preparation: OUTPUT switch/camera side panel→BARS

Adjustment Procedure

Adjust RV12 and RV13/ES-4 board so that the black beam spot is positioned in the center of the vectorscope screen.



## 6-4-3. COLOR-BAR SIZE ADJUSTMENT

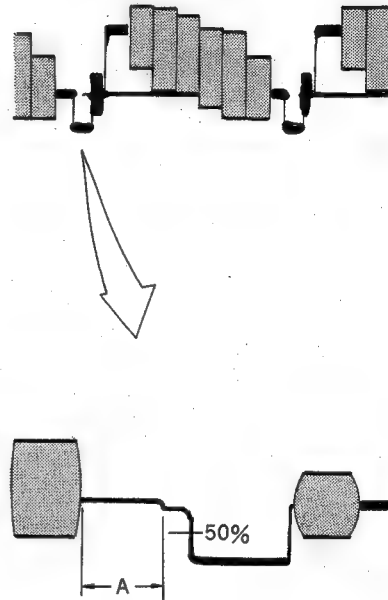
Equipment: Oscilloscope

To be extended: IE-33 Board

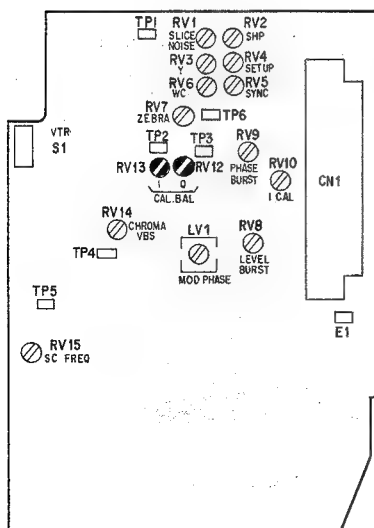
Preparation: OUTPUT switch/camera side panel→BARS

Adjusting point: RV14/IE-33 Board

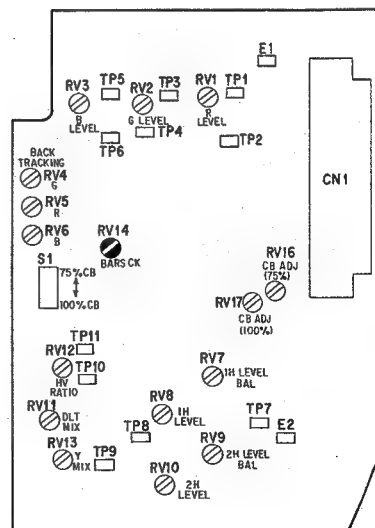
Specification:  $A = 4.0 \pm 0.2 \mu s$



ES-4/4P BOARD



IE-33/33P BOARD



#### 6-4-4. INT CB Y ADJUSTMENT

Equipment: Waveform monitor

To be extended: ES-4 Board

Preparation: OUTPUT switch/camera side panel→BARS

Adjustment Procedure

1. Adjusting point: ●RV4/ES-4 Board

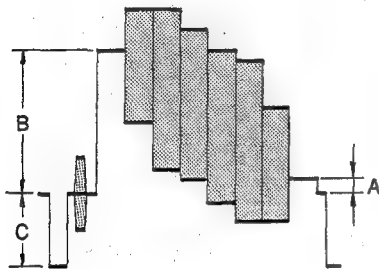
Specification:  $A = 7.5 \pm 0.5$  IRE

2. Adjusting point: ●RV3/ES-4 Board

Specification:  $B = 77 \pm 2$  IRE

3. Adjusting point: ●RV5/ES-4 Board

Specification:  $C = 40 \pm 2$  IRE



#### 6-4-5. COLOR VECTOR ADJUSTMENT

Equipment: Vectorscope

To be extended: ES-4 Board

Preparation:

• GAIN switch/Vectorscope→75% CAL

• Adjust the PHASE control on the vectorscope so that the burst spot is overlapped to the 75% axis.

• OUTPUT switch/camera side panel→BARS

Adjustment Procedure

1. Adjust ●RV8/ES-4 board so that the burst spot is located at 75% scale mark on the vectorscope screen.

2. Adjust the following controls alternately so that each beam spot stays inside the reference frame "□".

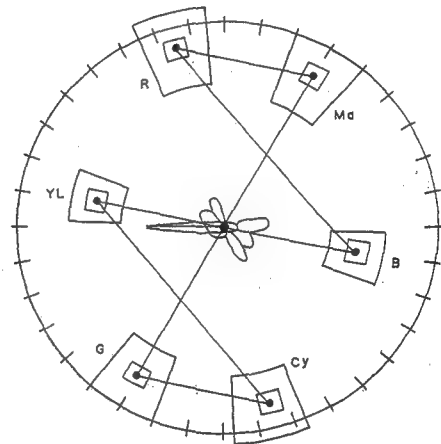
●LV1/ES-4 board

●RV9/ES-4 board

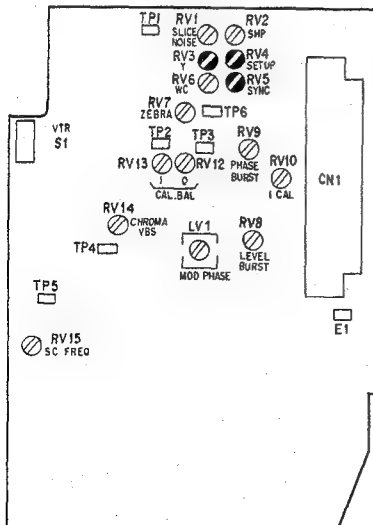
●RV10/ES-4 board

●RV14/ES-4 board

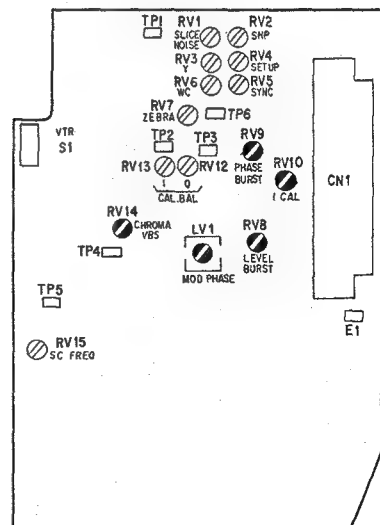
3. Repeat procedures 1 through 2 several times.



ES-4/4P BOARD



ES-4/4P BOARD



## 6-4-6. MATRIX ADJUSTMENT

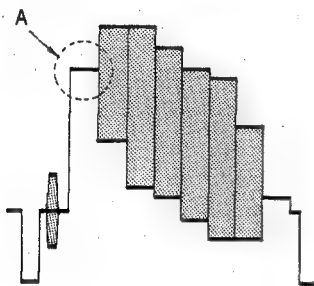
Equipment: Waveform monitor

To be extended: PR-159 Board

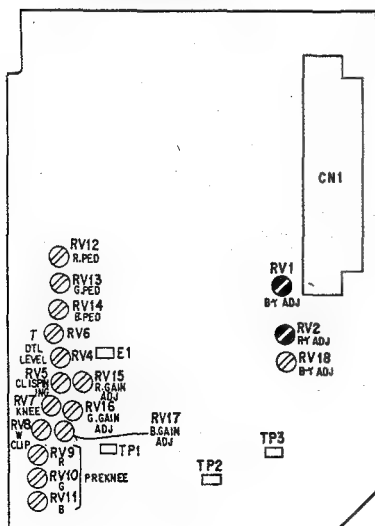
Preparation: OUTPUT switch/camera side panel→BARS

Adjustment Procedure

- Adjust RV1 and RV2/PR-159 board alternately so that the carrier leakage "A" is minimum.



PR-159/159P BOARD





### 6-5-2. 2H OUT BALANCE ADJUSTMENT

**Note :** Perform the adjustment only when replacing the delay line (IC16 or IC17).

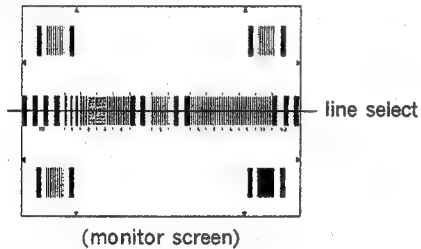
Object : Burst chart

Equipment : Oscilloscope, Waveform monitor

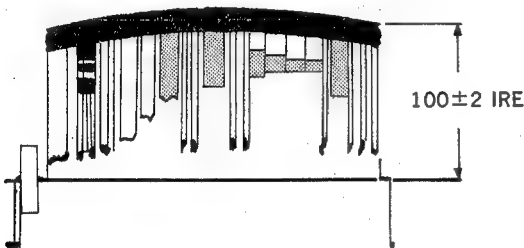
To be extended : IE-33 Board

Adjustment Procedure

1. Make sure that the lens is best focused. And adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.



2. Adjust the lens iris so that the VIDEO OUT level is  $100 \pm 2$  IRE.

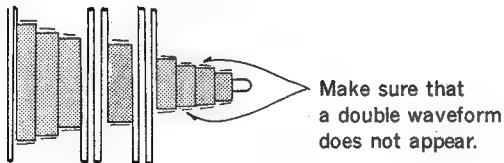


3. Test point : TP9(GND : E1)/IE-33 board.

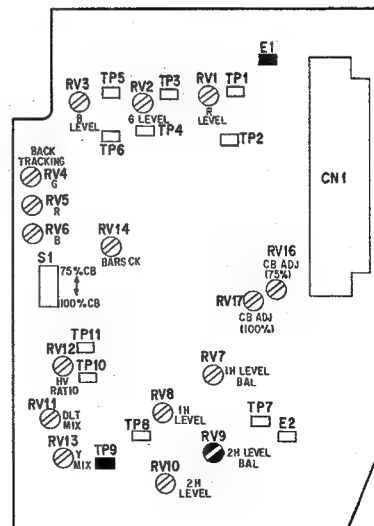
(To get the following picture, set the LINE SEL switch on the waveform monitor to "15 LINES". And select the center of the monitor screen by using the VAR control of LINE SEL.)

Adjusting point : RV9/IE-33 board

Specification : Make sure that a double waveform does not appear.



### IE-33/33P BOARD



### 6-5-3. 1H GAIN ADJUSTMENT

Object : Grayscale chart

Equipment : Oscilloscope, Waveform monitor

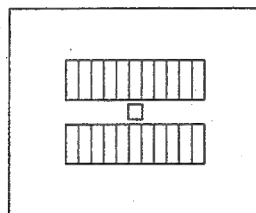
To be extended : IE-33 Board

Preparation :

- WHITE BAL switch/camera side panel → PRESET

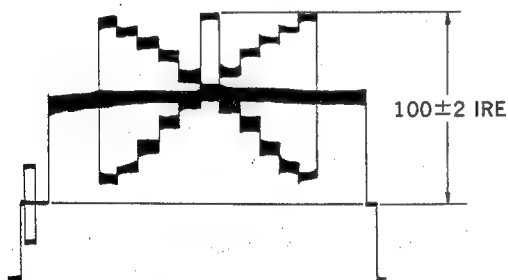
Adjustment Procedure

1. Adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.



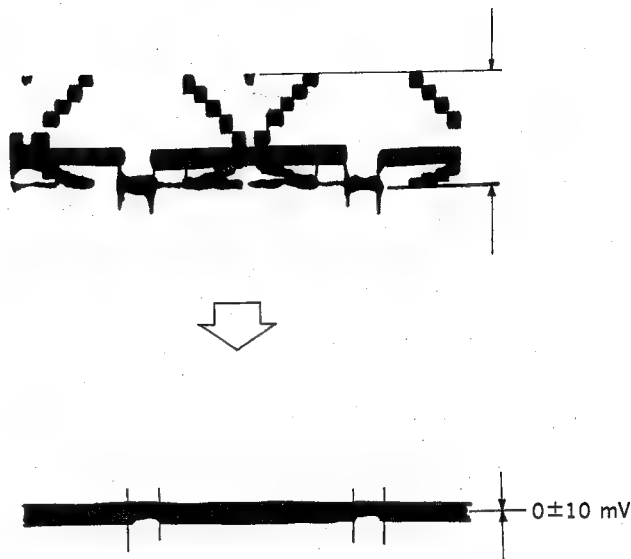
(monitor screen).

2. Adjust the lens iris so that the video level at VIDEO OUT is  $100 \pm 2$  IRE.

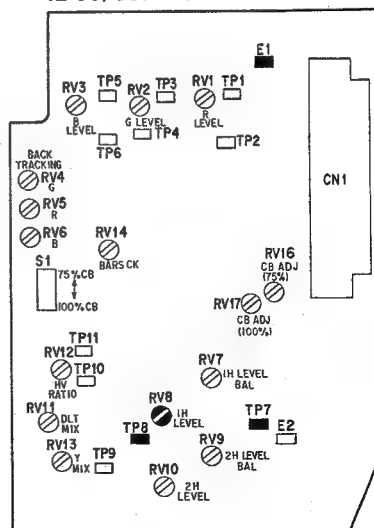


3. Put the oscilloscope into GAIN ADD mode and into CH-2 INVERT mode.
4. Connect CH-1 and CH-2 of oscilloscope to TP7 (GND : E1) on the IE-33 board. Adjust CH1-VAR or CH2-VAR control on the oscilloscope so that the waveform becomes flat for gain correction.
5. Connect CH-1 of oscilloscope to TP7 and CH-2 to TP8 on the IE-33 board.

6. Adjust RV8/IE-33 board so that the waveform becomes flat.



IE-33/33P BOARD



#### 6-5-4. 2H GAIN ADJUSTMENT

Object: Grayscale chart

Equipment: Oscilloscope, Waveform monitor

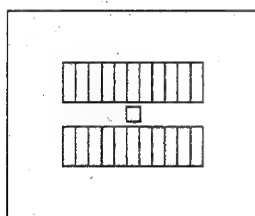
To be extended: IE-33 Board

Preparation:

- WHITE BAL switch/camera side panel→PRESET

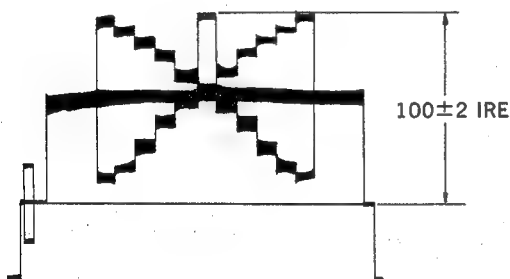
Adjustment Procedure

1. Adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.



(monitor screen)

2. Adjust the lens iris so that the video level at the VIDEO OUT is  $100 \pm 2$  IRE.

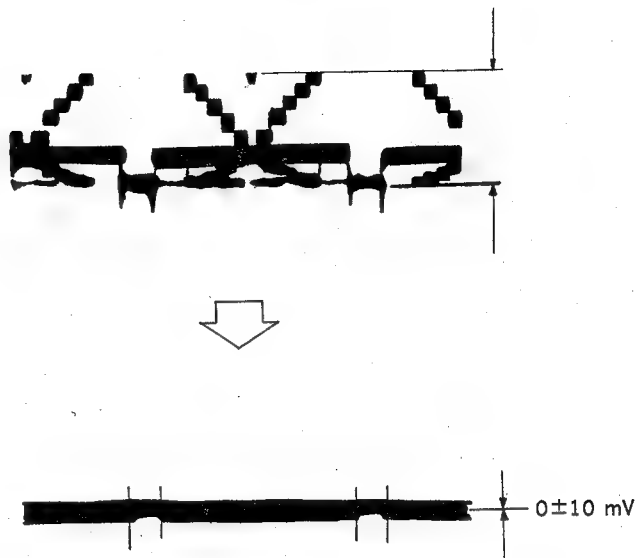


3. Put the oscilloscope into GAIN ADD mode and into CH-2 INVERT mode.

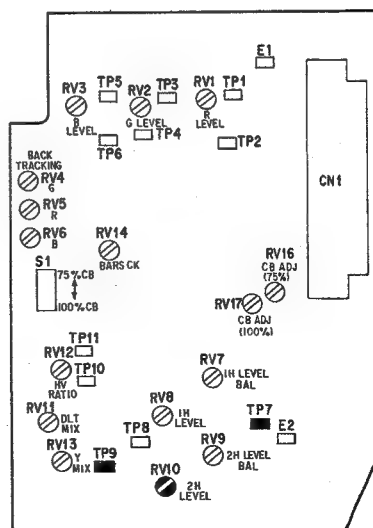
4. Connect CH-1 and CH-2 of oscilloscope to TP7 (GND: E1) on the IE-33 board. Adjust CH1-VAR or CH2-VAR control on the oscilloscope so that the waveform becomes flat for gain correction.

5. Connect CH-1 of oscilloscope to TP7 and CH-2 to TP9 on the IE-33 board.

6. Adjust RV10/IE-33 board so that the waveform becomes flat.



#### IE-33/33P BOARD



### 6-5-5. G-ch/B-ch/R-ch INPUT GAIN ADJUSTMENT

**Note:** Use a reflection type white chart for G-ch/B-ch/R-ch INPUT GAIN ADJUSTMENT. Control the light so that the white area of chart is exactly 3200K of color temperature. If the pattern box is used, PTB-500 should be used.

Object: Grayscale chart

Equipment: Oscilloscope

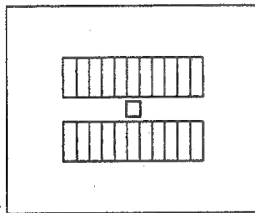
To be extended: IE-33 Board

Preparation:

- WHITE BAL switch/camera side panel→PRESET
- OUTPUT switch/camera side panel→CAM

Adjustment Procedure

1. Adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.

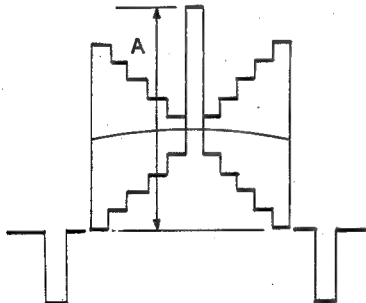


(monitor screen)

2. Test point: TP3(GND: E1)/IE-33 Board

Adjusting point: Lens iris

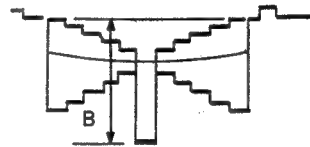
Specification:  $A=260\pm5$  mV



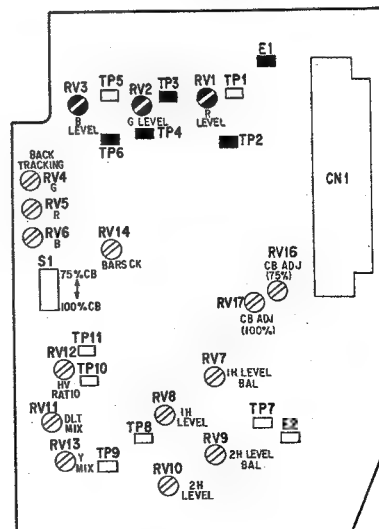
3. Perform adjustment in order of G-ch, R-ch and B-ch as shown below.

IE-33 Board

	Test point (GND: E1)	Adjusting point	Specification
G-ch	TP4	RV2	$B=115\pm5$ mV
R-ch	TP2	RV1	
B-ch	TP6	RV3	



IE-33/33P BOARD





### 6-5-6. G-ch GAIN/GAMMA/PED ADJUSTMENT

**Note :** • The item 6-5-5. G-ch/B-ch/R-ch INPUT GAIN ADJUSTMENT must be complete before beginning this adjustment.

- When this adjustment is done, perform Section 6-5-7. R-ch/B-ch GAIN/PED ADJUSTMENT through Section 6-5-12. PR WHITE CLIP ADJUSTMENT continuously.

Object: Grayscale chart

**Equipment:** Oscilloscope

To be extended: PR-159 Board

**Preparation :**

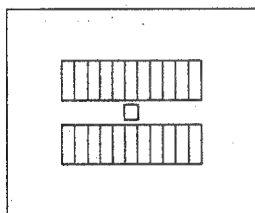
- RV7/PR-159 board→fully counterclockwise
- RV8/PR-159 board→fully clockwise
- RV9/PR-159 board→fully counterclockwise
- RV10/PR-159 board→fully counterclockwise
- RV11/PR-159 board→fully counterclockwise

Trigger: pin A10/extension board

Preparation: GAIN switch/camera side panel→0dB

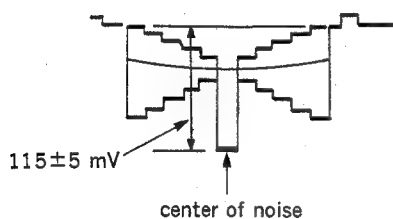
### Adjustment Procedure

1. Adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.

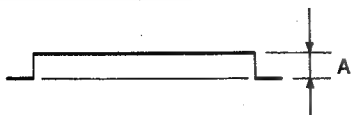


(monitor screen)

2. Adjust the lens iris so that the video level at pin A26(GND : pin B1)/extension board is  $115 \pm 5$  mV.

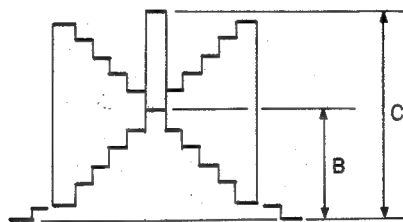


3. Put the cap on the lens.
4. Test point: pin B21(GND: pin B1)/extension board  
Adjusting point: ①RV13/PR-159 Board  
Specification:  $A=25\pm 2$  mV



- 5.Remove the cap from the lens.

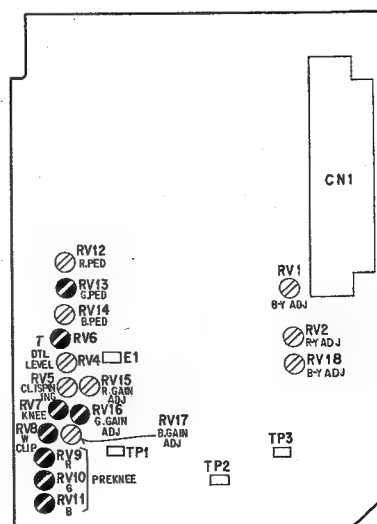
6. Test point: pin B21(GND: pin B1)/extension board  
Specification: B=550±20 mV; ①RV6/PR-159 Board  
C=1000±10 mV; ①RV16/PR-159 Board



- 7.Repeat procedures 3 through 6 several times.

**Note :** After the adjustment, carry out Section 6-5-7. R-ch/  
B-ch GAIN/PED ADJUSTMENT.

PR-159/159P BOARD



### 6-5-7. R-ch/B-ch GAIN/PED ADJUSTMENT

**Note:** The item 6-5-6. G-ch GAIN/GAMMA/PED ADJUSTMENT must be complete before beginning this adjustment.

Object: Grayscale chart

Equipment: Waveform monitor

To be extended: PR-159 Board

Preparation:

RV7/PR-159 board→fully counterclockwise

RV8/PR-159 board→fully clockwise

RV9/PR-159 board→fully counterclockwise

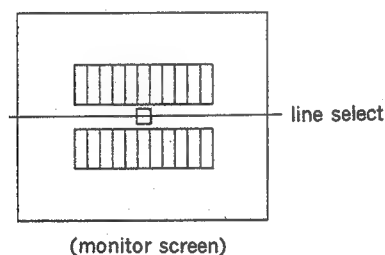
RV10/PR-159 board→fully counterclockwise

RV11/PR-159 board→fully counterclockwise

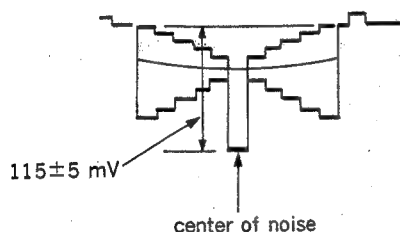
Test point: VIDEO OUT

Adjustment Procedure

1. Adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.



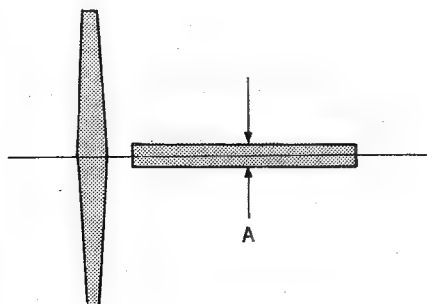
2. Adjust the lens iris so that the video level at pin A26(GND: pin B1)/extension board is  $115 \pm 5$  mV.



3. Put the cap on the lens.

4. Adjusting point: RV12, RV14/PR-159 Board

Specification: A=Minimum

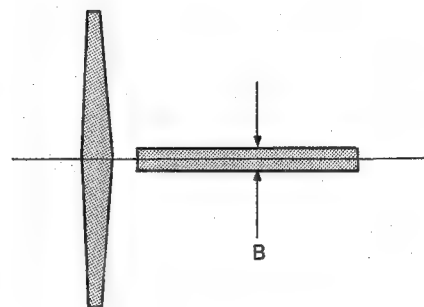


5. Remove the cap from the lens.

6. To get the following picture, set the LINE SEL switch on the waveform monitor to "15 LINES". And select the center of the monitor screen by using the VAR control of LINE SEL.

7. Adjusting point: RV15, RV17/PR-159 Board

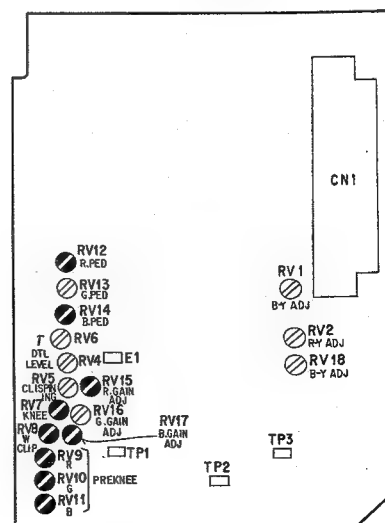
Specification: B=Minimum  
(WFM: BPF 3.58 mode)



8. Repeat Procedures 3 through 7 several times.

**Note:** After the adjustment, carry out Section 6-5-8. G-ch BLACK SET AND PEDESTAL ADJUSTMENT.

### PR-159/159P BOARD



### 6-5-8. G-ch BLACK SET AND PEDESTAL ADJUSTMENT

**Note:** Section 6-5-7. R-ch/B-ch GAIN/PED ADJUSTMENT must be complete before beginning this adjustment.  
Make sure that 18dB gains is set with the GAIN switch (camera side panel) set to HIGH position.

Lens iris: Close "C"

Equipment: Oscilloscope

To be extended: PR-159 Board

Preparation:

RV7/PR-159 board → fully counterclockwise

RV8/PR-159 board → fully clockwise

RV9/PR-159 board → fully counterclockwise

RV10/PR-159 board → fully counterclockwise

RV11/PR-159 board → fully counterclockwise

Trigger: pin A10/extension board

Adjustment Procedure

1. Adjust RV5/IE-33 board so that the pedestal level does not change when the GAIN switch on the side of the camera is switched over from 0 dB to HIGH (18dB).



2. GAIN switch/camera side panel → 0dB

3. Test point: B21 (GND: pin B1)/extension board

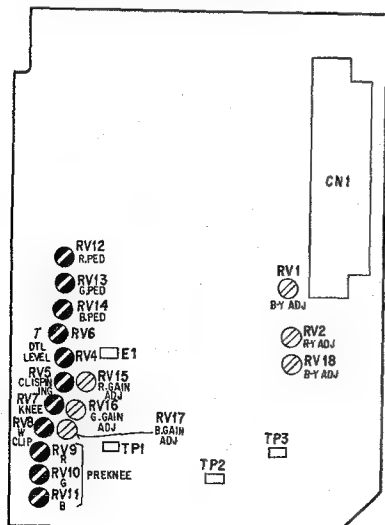
Adjusting point: RV13/PR-159 Board

Specification:  $C = 25 \pm 2$  mV



**Note:** After the adjustment, carry out Section 6-5-9. R-ch/B-ch BLACK SET AND PEDESTAL ADJUSTMENT.

### PR-159/159P BOARD



EVW-300 (UC)

### 6-5-9. R-ch/B-ch BLACK SET AND PEDESTAL ADJUSTMENT

**Note:** • Section 6-5-8. G-ch BLACK SET AND PEDESTAL ADJUSTMENT must be complete before beginning this adjustment.

- Make sure that 18dB gains is set with the GAIN switch (camera side panel) set to HIGH position.
- Set the GAIN switch/vectorscope to MAX.

Lens iris: Close "C"

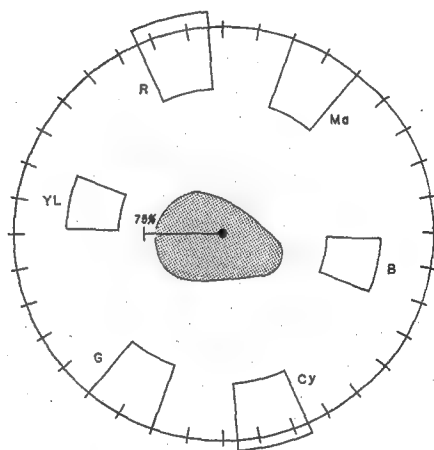
Equipment: Vectorscope

To be extended: PR-159 Board

Test point: VIDEO OUT

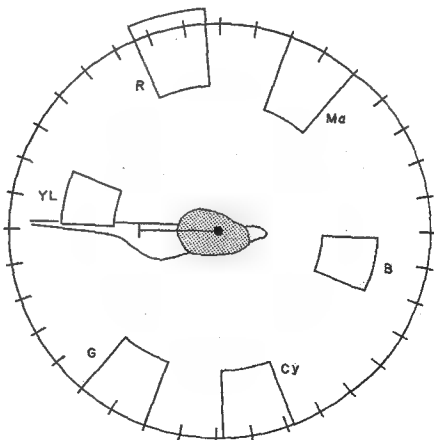
Adjustment Procedure

1. GAIN switch/camera side panel → HIGH (18dB)
2. Adjust RV4 and RV6/IE-33 board so that the black beam spot is positioned in the center of the vectorscope.



3. GAIN switch/camera side panel → 0dB

4. Adjust RV12 and RV14/PR-159 board so that the black beam spot is positioned in the center of the vectorscope.



5. Repeat procedures 1 through 4 several times.

**Note:** After the adjustment, carry out Section 6-5-10. KNEE ADJUSTMENT.

### 6-5-10. KNEE ADJUSTMENT

**Note :** Section 6-5-9 R-ch/B-ch BLACK SET AND PEDESTAL ADJUSTMENT must be complete before beginning this adjustment.

Object: Grayscale chart

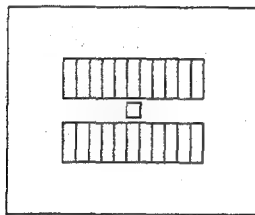
Equipment: Oscilloscope

To be extended: PR-159 Board

Test point: pin B21/extension board

Adjustment Procedure

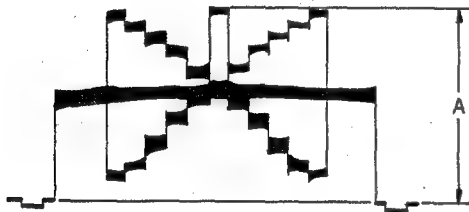
1. Adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.



(monitor screen)

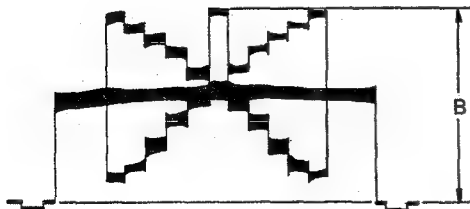
2. Adjusting point: Lens iris

Specification:  $A = 1020 \pm_{10}^0$  mV



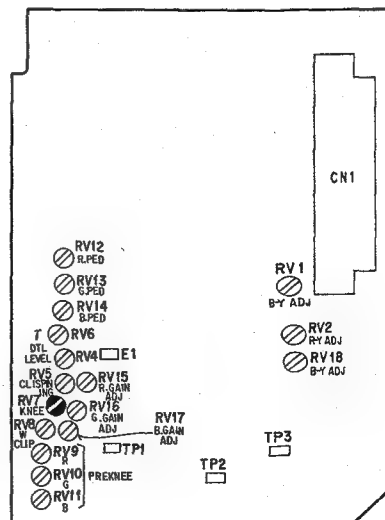
3. Adjusting point: RV7/PR-159 Board

Specification:  $B = 1000 \pm_{10}^0$  mV



**Note :** After the adjustment, carry out Section 6-5-11. PRE KNEE ADJUSTMENT.

### PR-159/159P BOARD



### 6-5-11. PRE KNEE ADJUSTMENT

**Note :** Section 6-5-10 KNEE ADJUSTMENT must be complete before beginning this adjustment.

Object : Grayscale chart

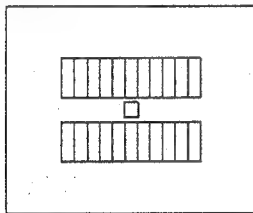
Equipment : Oscilloscope, Waveform monitor

To be extended : PR-159 Board

Trigger : pin A10/extension board

Adjustment Procedure

1. Adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.

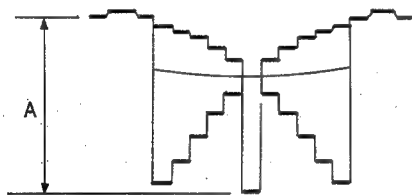


(monitor screen)

2. Test point : pin A26(GND : pin B1)/extension board

Adjusting point : Lens iris

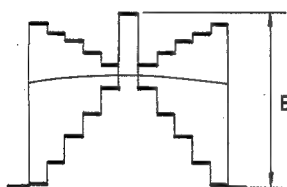
Specification :  $A = 350 \pm 10$  mV



3. Test point : pin B21(GND : pin B1)/extension board

Adjusting point : RV10/PR-159 Board

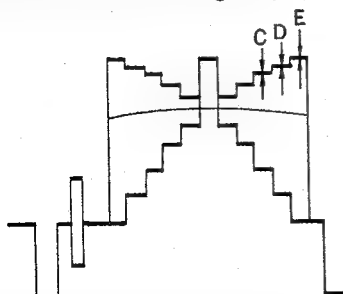
Specification :  $B = 1150 \pm 20$  mV



4. Test point : VIDEO OUT

Adjusting point : RV9, RV11/PR-159 Board

Specification : Carrier leakages C, D, E → Minimum



**Note :** After the adjustment, carry out Section 6-5-12 PR WHITE CLIP ADJUSTMENT.

### 6-5-12. PR WHITE CLIP ADJUSTMENT

**Note :** Section 6-5-11 PRE KNEE ADJUSTMENT must be complete before beginning this adjustment.

Make sure that 18dB gains is set with the GAIN switch (camera side panel) set to 18dB.

Object : Grayscale chart

Equipment : Oscilloscope

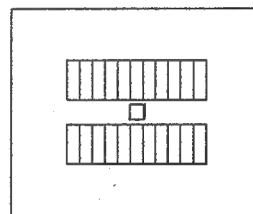
To be extended : PR-159 Board

Preparation : GAIN switch/camera side panel → 0dB

Test point : pin B21/extension board

Adjustment Procedure

1. Adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.



(monitor screen)

2. GAIN switch/camera side panel → HIGH(18dB)

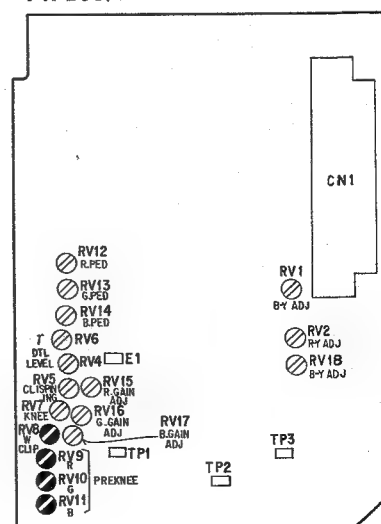
Adjusting point : RV8/PR-159 Board

Specification :  $A = 1150 \pm 10$  mV



**Note :** After the adjustment, set switch as follows.  
GAIN switch/camera side panel → 0dB

### PR-159/159P BOARD



### 6-5-13. ALIASING ADJUSTMENT

**Note:** When this adjustment is done, perform Section 6-5-14 APERTURE CRISPENING ADJUSTMENT through Section 6-5-18 DETAIL LEVEL ADJUSTMENT continuously.

Object: Burst chart

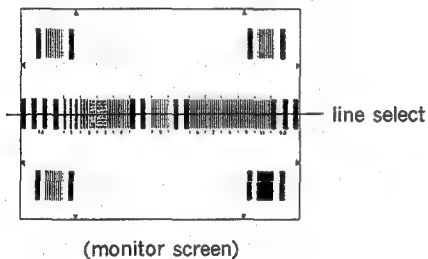
Equipment: Waveform monitor

Test point: VIDEO OUT

Preparation: RV4/PR-159 board→fully clockwise

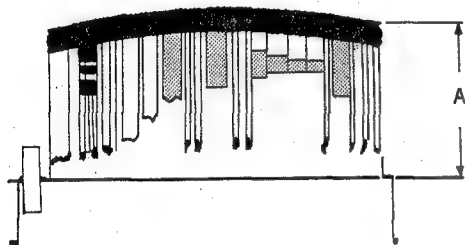
Adjustment Procedure

1. Make sure that the lens is best focused. And adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.



2. Adjusting point: Lens iris

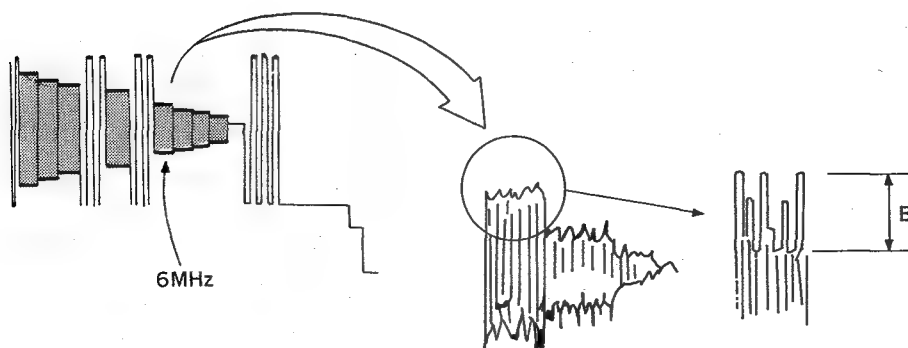
Specification:  $A = 80 \pm 2$  IRE



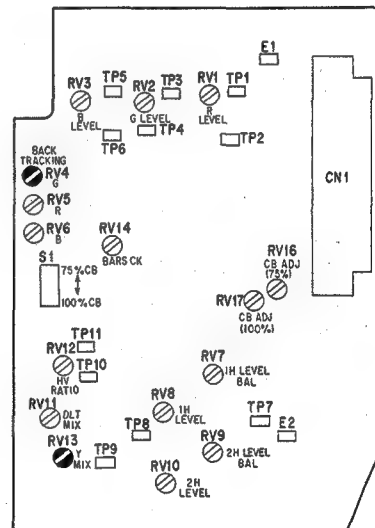
3. Adjusting point: RV13/IE-33 Board

Specification: B=Minimum

(To get the following picture, set the LINE SEL switch on the waveform monitor to "15 LINES". And select the center of the monitor screen by using the VAR control of LINE SEL.)



### IE-33/33P BOARD



#### 6-5-14. APERTURE CRISPENING ADJUSTMENT

**Note:** Section 6-5-13 ALIASING ADJUSTMENT must be complete before beginning this adjustment.

Object: Burst chart

Equipment: Waveform monitor

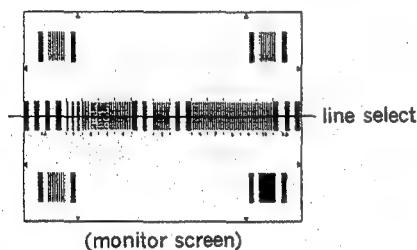
To be extended: ES-4 board

Preparation: **RV4/PR-159 board**→Fully clockwise 

Test point: VIDEO OUT

Adjustment Procedure

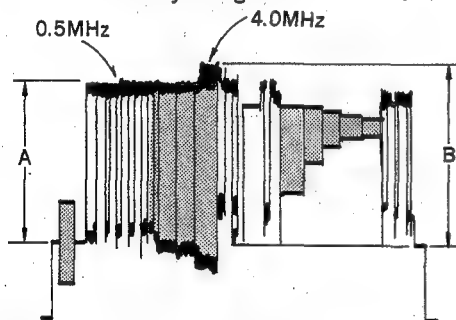
1. Make sure that the lens is best focused. And adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.



2. Adjusting point: Lens iris

Specification:  $A = 80 \pm 2$  IRE (0.5MHz LEVEL)

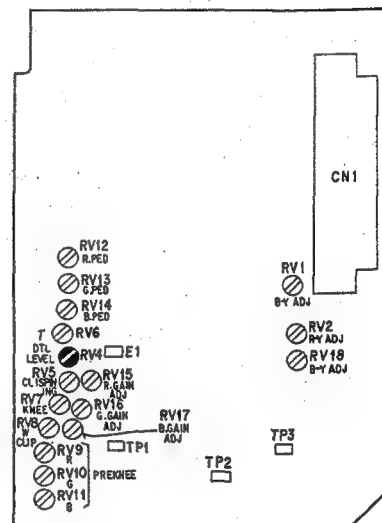
To get the following picture, set the LINE SEL switch on the waveform monitor to "15 LINES". And select the center of the monitor screen by using the VAR control of LINE SEL.



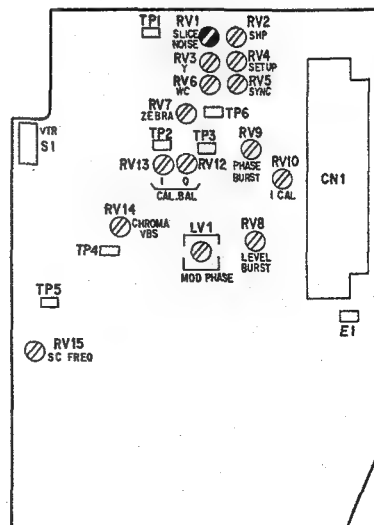
3. Adjusting point: **RV1/ES-4 Board**

Specification: B=Minimum (4.0 MHz LEVEL)

**PR-159/159P BOARD**



**ES-4/4P BOARD**



### 6-5-15. Y<sub>H</sub> LEVEL ADJUSTMENT

**Note:** Section 6-5-14 APERTURE CRISPENING ADJUSTMENT must be complete before beginning this adjustment.

Object: Burst chart

Equipment: Waveform monitor

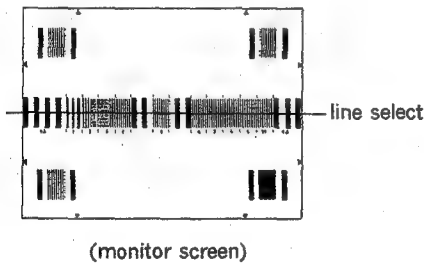
To be extended: ES-4 Board

Preparation: RV4/PR-159 board → Fully clockwise

Test point: VIDEO OUT

Adjustment Procedure

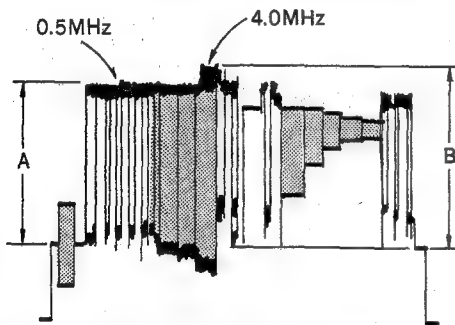
1. Make sure that the lens is best focused. And adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.



2. Adjusting point: Lens iris

Specification:  $A = 80 \pm 2$  IRE (0.5MHz LEVEL)

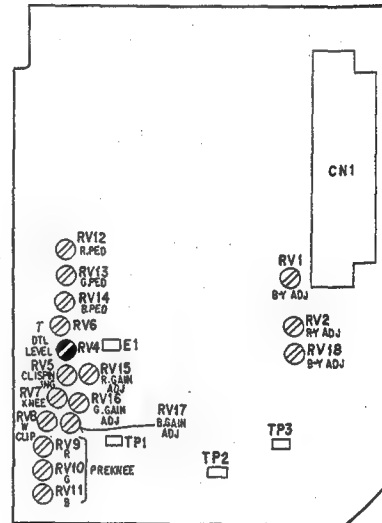
(To get the following picture, set the LINE SEL switch on the waveform monitor to "15 LINES". And select the center of the monitor screen by using the VAR control of LINE SEL.)



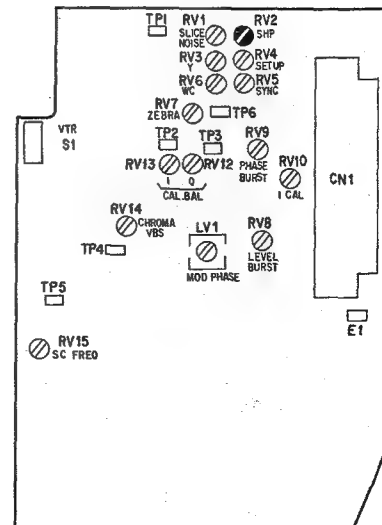
3. Adjusting point: RV2/ES-4 Board

Specification:  $B = 85 \pm 3$  IRE (4.0MHz LEVEL)

PR-159/159P BOARD



ES-4/4P BOARD



**Note:** After the adjustment, carry out Section 6-5-16. DTL CRISPENING ADJUSTMENT.



### 6-5-16. DTL CRISPENING ADJUSTMENT

**Note:** Section 6-5-15  $Y_H$  LEVEL ADJUSTMENT must be complete before beginning this adjustment.

Object: Burst chart

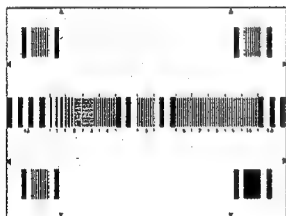
Equipment: Oscilloscope, Waveform monitor

To be extended: PR-159 Board

Preparation: ⚙️RV5/PR-159 board→Fully clockwise ⌚

### Adjustment Procedure

1. Make sure that the lens is best focused. And adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.

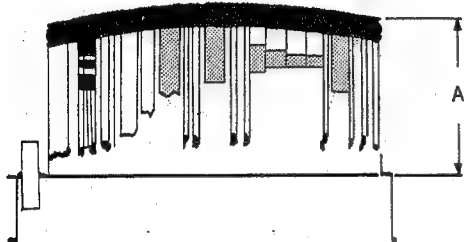


(monitor screen)

- ## 2. Test point: VIDEO OUT

Adjusting point: Lens iris

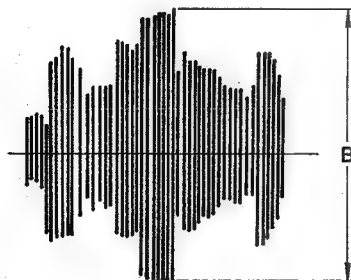
Specification:  $A=80\pm3$  IRE



- 3. Test point: pin B15(GND: pin B1)/extension board**

Adjusting point: **RV4/PR-159 Board**

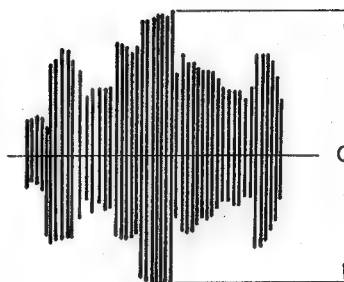
Specification:  $B=250\pm10$  mV



4. Test point: pin B15(GND: pin B1)/extension board

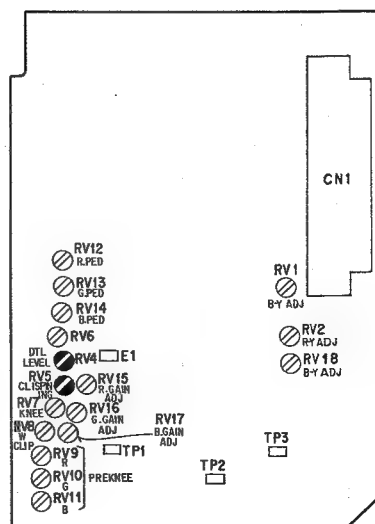
Adjusting point: ①RV5/PR-159 Board

Specification :  $C=B \times 95\%$



**Note:** After the adjustment, carry out Section 6-5-17. DTL ALIASING ADJUSTMENT.

## PR-159/159P BOARD



### 6-5-17. DTL ALIASING ADJUSTMENT

**Note :** Section 6-5-16 DTL CRISPENING ADJUSTMENT must be complete before beginning this adjustment.

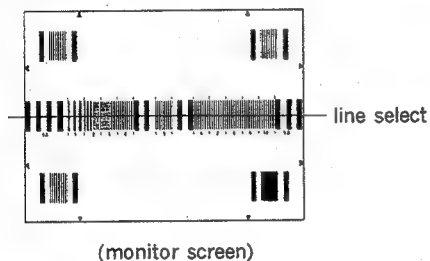
Object: Burst chart

Equipment: Waveform monitor

Test point: VIDEO OUT

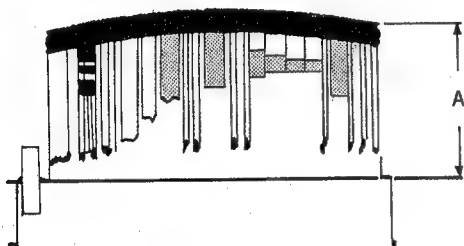
Adjustment Procedure

1. Make sure that the lens is best focused. And adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.



2. Adjusting point: Lens iris

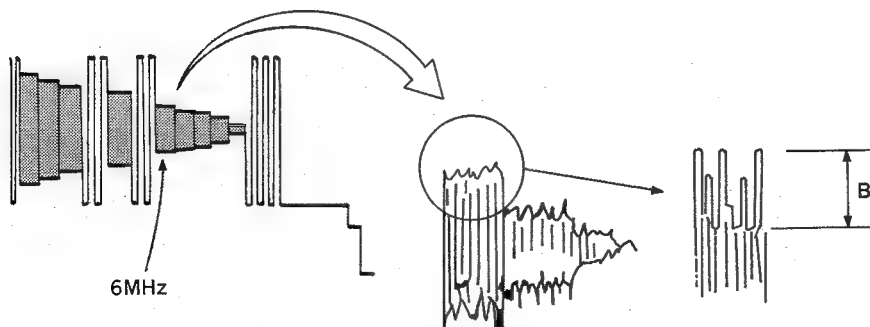
Specification:  $A = 80 \pm 3$  IRE



3. To get the following picture, set the LINE SEL switch on the waveform monitor to "15 LINES". And select the center of the monitor screen by using the VAR control of LINE SEL.

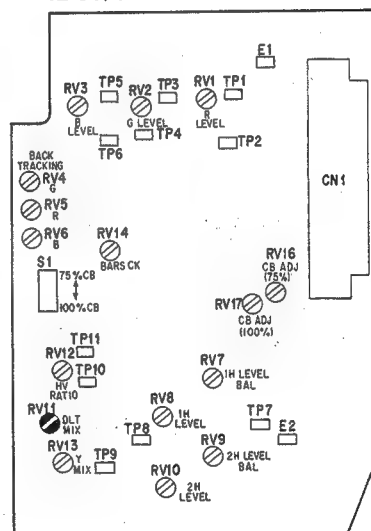
Adjusting point: RV11/IE-33 Board

Specification: B = Minimum



**Note :** After the adjustment, carry out Section 6-5-18 H/V RATIO ADJUSTMENT.

### IE-33/33P BOARD



### 6-5-18. H/V RATIO ADJUSTMENT

**Note :** Section 6-5-17 DTL ALIASING ADJUSTMENT must be complete before beginning this adjustment.

Object : Grayscale chart

Equipment: B/W monitor screen

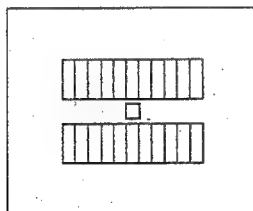
Preparation: WHITE BAL switch/camera side panel  
→PRESET

Test point: VIDEO OUT

Adjusting point: ①RV12/IE-33 Board

### Adjustment Procedure

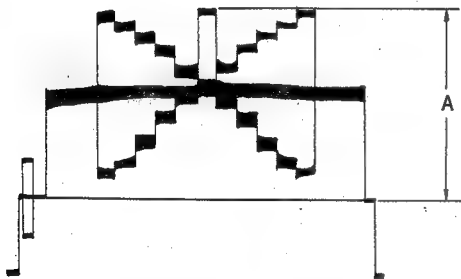
1. Make sure that the lens is best focused. And adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.



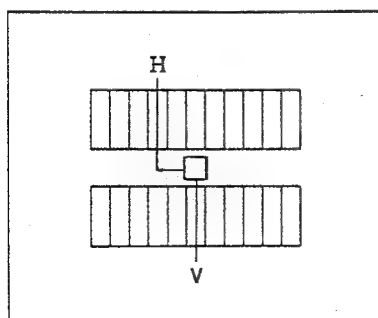
(monitor screen)

2. Adjusting point: Lens iris

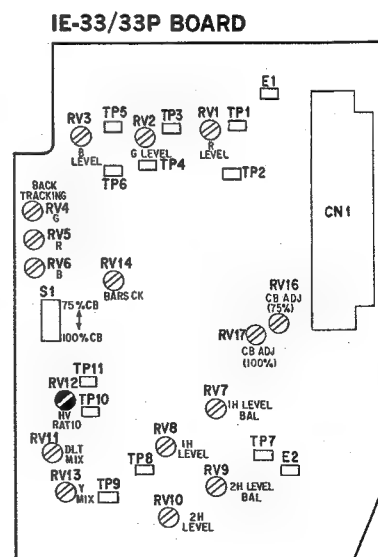
Specification:  $A=80\pm 2$  IRE



3. Observing the indicated point on the B/W monitor (See the figure below), adjust **ORV12/IE-33** board so that the DTL H and V are balanced.



**Note :** After the adjustment, carry out Section 6-5-19.  
DETAIL ADJUSTMENT.



### 6-5-19. DETAIL LEVEL ADJUSTMENT

**Note:** Section 6-5-18 H/V RATIO ADJUSTMENT must be complete before beginning this adjustment.

Object: Grayscale chart

Equipment: Waveform monitor

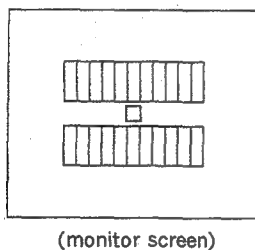
Preparation: WHITE BAL switch/camera side panel  
→PRESET

Test point: VIDEO OUT

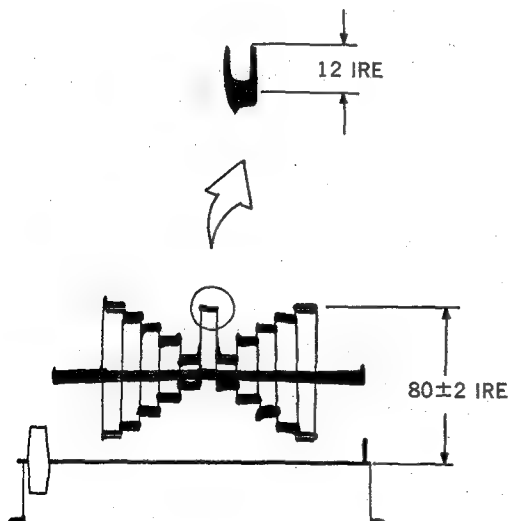
Adjusting point: RV4/PR-159 Board

Adjustment Procedure

1. Adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.

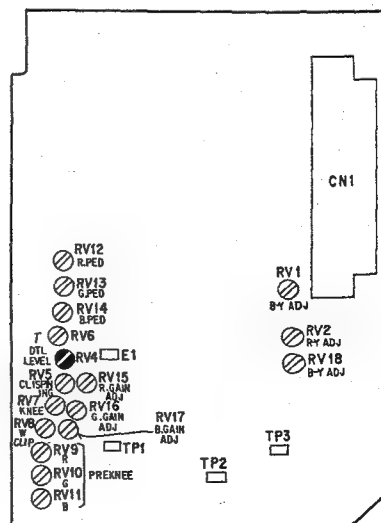


2. Adjust the lens iris so that the video level at VIDEO OUT is  $80 \pm 2$  IRE.
3. Adjust RV4/PR-159 board so that the detail level at both ends of the white level is  $12 \pm 2$  IRE. (Note: If the two DTL levels are not balanced, take the higher one.)



4. Repeat Section 6-5-18. H/V RATIO ADJUSTMENT and 6-5-19. DETAIL LEVEL ADJUSTMENT several times.

### PR-159/159P BOARD



## 6-5-20. ES WHITE CLIP ADJUSTMENT

Object: Burst chart

Equipment: Waveform monitor

To be extended: ES-4 Board

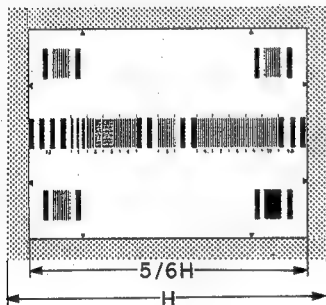
Test point: VIDEO OUT

Preparation:

- WHITE BAL switch/camera side panel→PRESET
- GAIN switch/camera side panel→0dB

Adjustment Procedure

1. Make sure that the lens is best focused. And adjust the zoom control of the lens so that the chart frame touches the underscanned monitor frame.



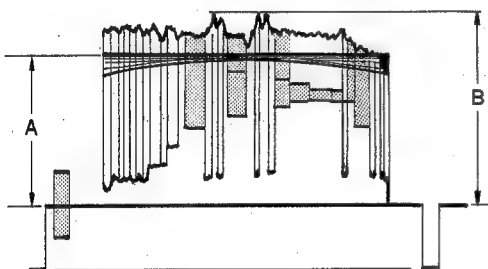
(monitor screen)

2. Adjusting point: Lens iris

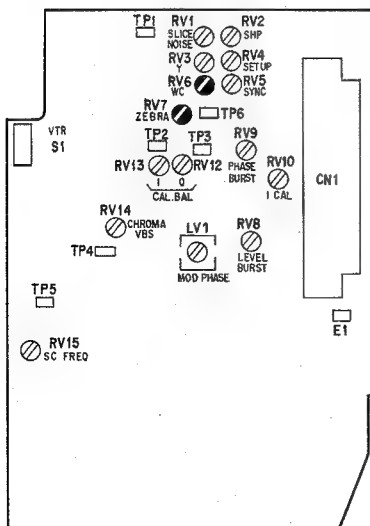
Specification:  $A = 110 \pm 2$  IRE

3. Adjusting point: RV6/ES-4 Board

Specification:  $B = 125 \pm 2$  IRE (the highest level)



ES-4/4P BOARD



## 6-5-21. ZEBRA LEVEL ADJUSTMENT

Object: Grayscale chart

Equipment: Viewfinder screen

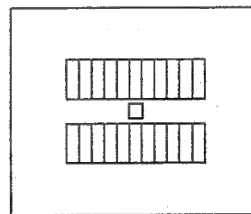
To be extended: ES-4 Board

Preparation: OUTPUT switch/camera side panel→CAM

Adjusting point: RV7/ES-4 Board

Adjustment Procedure

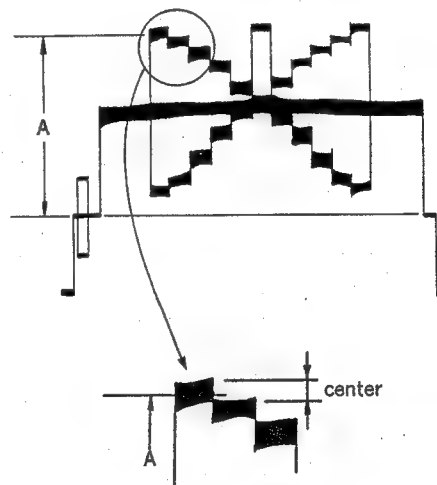
1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.



(monitor screen)

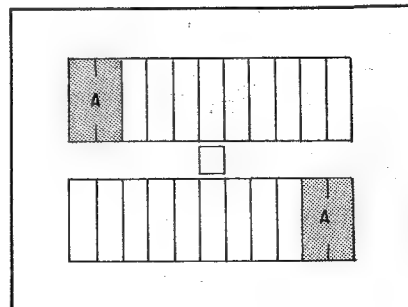
2. Adjusting point: Lens iris

Specification:  $A = 70 \pm 2$  IRE



3. Adjust RV7/ES-4 board so that the zebra pattern appears in the portion A of the VF screen as shown below.

Viewfinder Screen



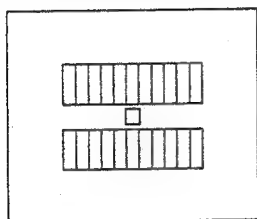
## 6-5-22. AUTO IRIS ADJUSTMENT

Object: Grayscale chart

Equipment: Viewfinder screen

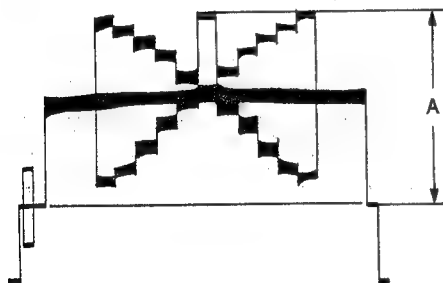
Adjustment Procedure

1. Adjust the zoom control so that the grayscale chart frame touches the understand picture frame on the monitor.



(monitor screen)

2. IRIS AUTO/MANU (Lens) → MANU
3. POWER switch/camera side panel → OFF
4. S2 (FULL FUNC ↔ OPE) / AT-70 board  
→ FULL FUNC (Under side)  
S4 (ADJ/OPE) / AT-70 board → OPE (Upper side)
5. Turn the POWER switch/camera side panel ON while pressing both UP button and DOWN button on the front panel.
6. Adjust the lens iris so that the VIDEO OUT level "A" is  $100 \pm 1$  IRE.



7. Press the UP button on the front panel only once for memorizing the auto iris level.

**Note:** After the adjustment, set S2 (FULL FUNC ↔ OPE) / AT-70 board to "OPE" (Upper side) position.

## SECTION 7 VTR ELECTRICAL ALIGNMENT

### 7-1. PREPARATION

#### 7-1-1. EQUIPMENT REQUIRED

- Oscilloscope (100 MHz or more)
- Vectorscope
- Waveform monitor
- Frequency counter
- Audio signal generator
- Audio level meter
- Shorting clip
- Blank tape(P6-60MP or equivalent),  
(E6-60ME or equivalent)
- Alignment tape
- Variable voltage power supply (+12V, 5A)

Name (Part No.)	REC mode	Tape Type	Tape Speed	Contents	
				Video Area	PCM Area
Video freq. resp. WR5-7NE (8-967-995-13)	Hi8	ME	SP	RF Sweep 0 to 15MHz Marker : 2.0 MHz 4.5 MHz 7.0 MHz 8.5 MHz 10.0 MHz	
SP operation check WR5-5NSP (8-967-995-42)	STD	MP	SP	VIDEO SIGNAL Color-bar 4 min. Monoscope 4 min. AUDIO SIGNAL 400 Hz 60% mod.	AUDIO SIGNAL(PCM) Monoscope Section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. Color-bar Section 1 kHz 4 sec.
SP operation check WR5-8NSE (8-967-995-43)	Hi8	ME	SP		AUDIO SIGNAL(PCM) 400 Hz 20 min.

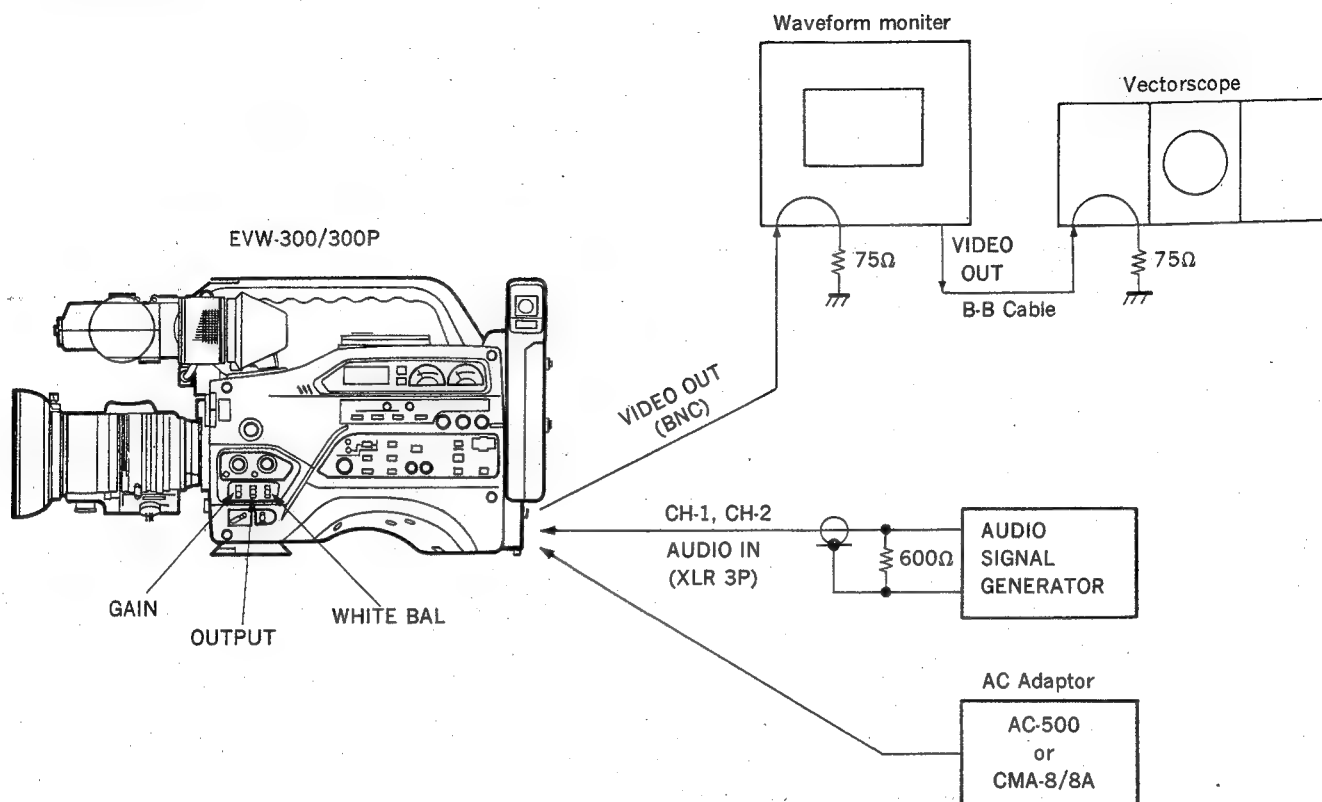
#### 7-1-2. ADJUSTMENT FIXTURE

Adjustment Fixture for SS-50 board extension

- SS Flexible Board 1 (Type JH-099, 26-pin),  
(Sony part No. J-6360-990-A) 2 pieces
- SS Flexible Board 2 (Type JH-100, 14-pin),  
(Sony part No. J-6361-000-A) 1 piece
- SS Flexible Board 3 (Type JH-101, 13-pin),  
(Sony part No. J-6361-010-A) 1 piece
- SS Flexible Board 4 (Type JH-102, 11-pin),  
(Sony part No. J-6361-020-A) 1 piece

Tracking Adjustment Fixture (Type JH-541), (Sony part No. J-6365-410-A)

### 7-1-3. CONNECTION



### 7-1-4. INITIAL SETTING AND ADJUSTMENT

#### • Initial Setting

Setting of the camera side

Side panel

GAIN switch: 0dB

OUTPUT switch: BARS

WHITE BAL switch: PRESET

S1(75%/100%)/IE-33 Board: 100%

Setting of the VTR side

Side panel

AUDIO SELECT PCM1 .....AUTO

PCM2 .....AUTO

AFM .....AUTO

MONITOR SELECT .....PCM, ST/MIX

CH1/CH2 Switches CH1.....LINE

CH2.....LINE

#### • Initial Adjustment

**Note :** 1. Before adjustment, connect the equipments referring to Section 7-1-3 CONNECTION. Check that it meets the specifications in Section 7-1-5 COLOR BAR SIGNAL

2. Before adjustment, turn the POWER ON and allow for 10 minute warm-up time.

**Note :** Do not touch the switches as mentioned above without particular indication.

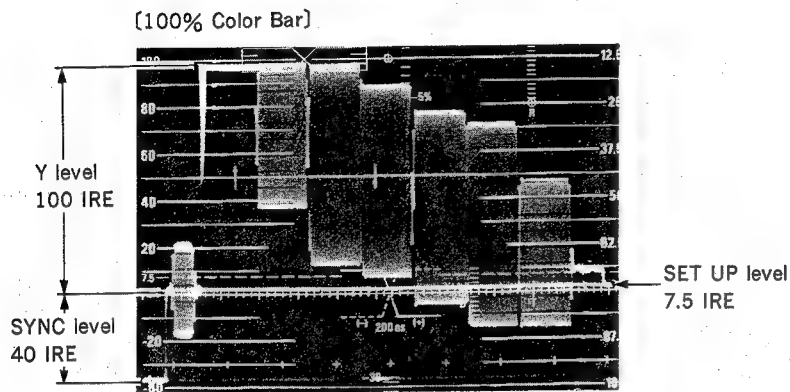


### 7-1-5. COLOR BAR SIGNAL

Equipment: Vectorscope, Waveform monitor

Preparation: OUTPUT switch/Camera side panel→BARS

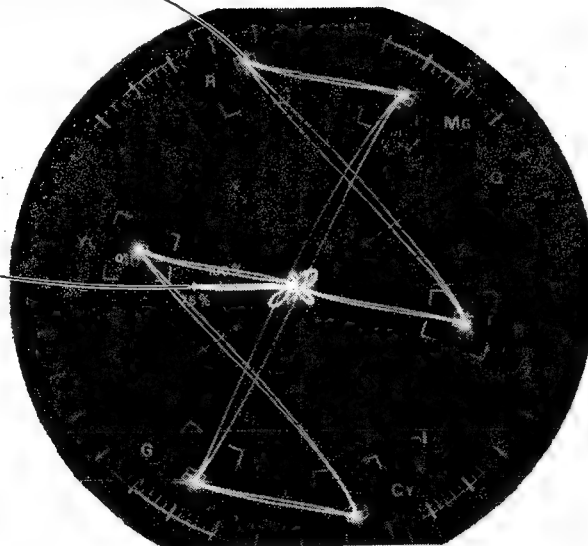
Specification:



#### Chroma Level

- Adjust the beam spots of each color (R, YL, G, CY, B and MG) to be inside the “田” mark.

Burst Spot 75%



**Note :** When it does not meet the specifications, perform Section 6-4. Encoder System Adjustment.

## 7-2. SERVO SYSTEM ADJUSTMENT

### 7-2-1. PWM OSCILLATION FREQUENCY ADJUSTMENT

Equipment: Frequency counter

To be extended: SS-50 Board

Preparation:

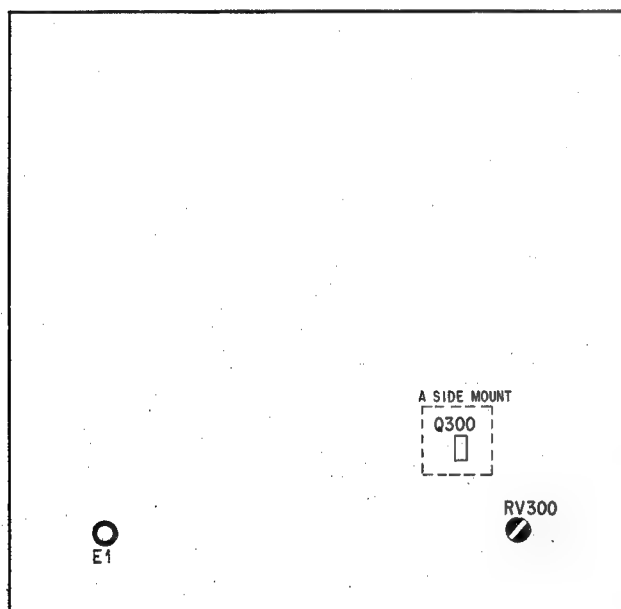
- Play back the color-bar signal portion of the alignment tape WR5-5NSP.

Test point: Collector of the transistor Q300(GND: E1)/SS-50 Board

Adjusting point: ●RV300/SS-50 Board

Specification:  $400 \pm 2$  kHz

#### SS-50 BOARD



## 7-3. AUDIO SYSTEM ADJUSTMENT

### 7-3-1. AUDIO AGC ADJUSTMENT

Equipment: Audio level meter

To be extended: FP-40 Board

Preparation:

- AUDIO IN: CH-1 400 Hz, +4 dBu
- AUDIO INPUT SELECT:  
PCM1 CH-1/CAM→CH-1
- AUDIO SELECT:  
PCM1 AUTO/MAN→AUTO
- EE mode

Test point: TP3(GND: E1)/FP-40 Board

Adjusting point: ●RV4/FP-40 Board

Specification:  $-10.0 \pm 0.2$  dBu

### 7-3-2. AUDIO AFM EE LEVEL ADJUSTMENT

Equipment: Audio level meter

To be extended: FP-40 Board

Preparation:

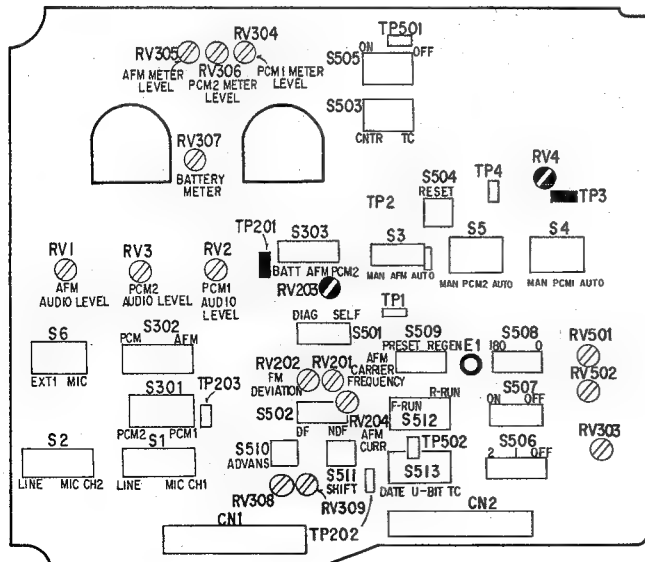
- AUDIO IN: CH-1 400 Hz, +4 dBu
- AUDIO INPUT SELECT:  
PCM1 CH-1/CAM→CAM
- AUDIO SELECT:  
AFM AUTO/MAN→AUTO
- EE mode

Test point: TP201(GND: E1)/FP-40 Board

Adjusting point: ●RV203/FP-40 Board

Specification:  $-10.0 \pm 0.2$  dBu

#### FP-40 BOARD



### 7-3-3. PCM MASTER CLOCK ADJUSTMENT

Equipment: Frequency counter

To be extended: AU-162 Board

Preparation:

1. Connect TP201/AU-162 and TP202/AU-162 with shorting clip.
2. Connect TP203/AU-162 and TP109/AU-162 with shorting clip.
3. EE mode

Test point: TP103(GND: E101)/AU-162 Board

Adjusting point: ●CV201/AU-162 Board

Specification:  $11.58 \pm 0.01$  MHz

**Note:** After the adjustment, remove a shorting clip.

### 7-3-4. PCM PLAYBACK VCO FREE-FREQUENCY ADJUSTMENT

Equipment: Frequency counter

To be extended: AU-162 Board

Preparation:

1. Connect TP104/AU-162 and TP109/AU-162 with shorting clip.
2. Connect TP105/AU-162 and TP109/AU-162 with shorting clip.
3. Play back the Audio 400Hz portion of the alignment tape WR5-5NSP.

Test point: TP106(GND: E101)/AU-162 Board

Adjusting point: ●RV102/AU-162 Board

Specification:  $11.58 \pm 0.01$  MHz

**Note:** After the adjustment, remove a shorting clip.

### 7-3-5. AUDIO PCM D/A CONVERTER LEVEL ADJUSTMENT

Equipment: Audio level meter

To be extended: AU-162 Board

Preparation:

- Play back the Audio 400Hz portion of the alignment tape WR5-5NSP.

Adjusting point: ●RV6/AU-162 Board

Specification: TP3(GND: E1)/AU-162 Board;

$-10.0 \pm 0.2$  dBu

TP4(GND: E1)/AU-162 Board;

$-10.0 \pm 0.2$  dBu

**Note:** If there is the level difference between the TP3 and TP4, adjust the RV6 to be on the center value.

### 7-3-6. AUDIO PCM NR DECODE LEVEL ADJUSTMENT

Equipment: Audio level meter

To be extended: AU-162 Board

Preparation:

- Play back the Audio 400Hz portion of the alignment tape WR5-5NSP.

Adjusting point: ●RV3/AU-162 Board

Specification: TP1(GND: E1)/AU-162 Board;

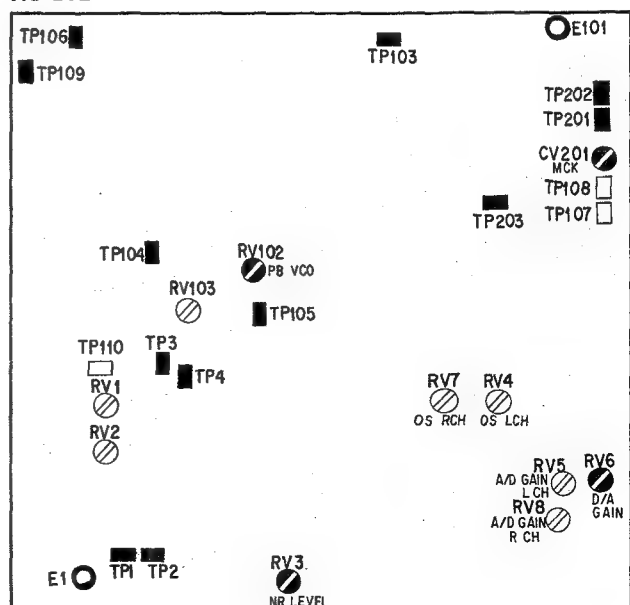
$-14.0 \pm 0.5$  dBu

TP2(GND: E1)/AU-162 Board;

$-14.0 \pm 0.5$  dBu

**Note:** If there is the level difference between the TP1 and TP2, adjust the RV3 to be on the center value.

AU-162 BOARD



### 7-3-7. AUDIO PCM A/D CONVERTER OFFSET ADJUSTMENT

Equipment: Oscilloscope

To be extended: AU-162 Board

Preparation:

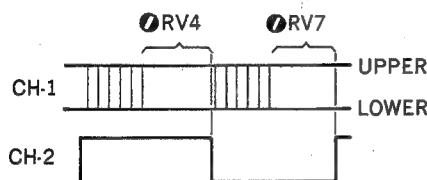
- AUDIO IN: 400 Hz,  $-\infty$
- AUDIO SELECT:
  - PCM1 AUTO/MAN→MAN
  - PCM2 AUTO/MAN→MAN
- REC mode
- AUDIO LEVEL PCM1 control(side panel)→Fully counter-clockwise ⌚
- AUDIO LEVEL PCM2 control(side panel)→Fully counter-clockwise ⌚

Test point: CH1 TP108(GND: E101)/AU-162 Board

CH2 TP107(GND: E101)/AU-162 Board

Adjusting point: ⌚RV4/AU-162 Board

⌚RV7/AU-162 Board



Adjust upper and lower brightnesses to be the same.

### 7-3-8. PCM1 EE LEVEL ADJUSTMENT

Equipment: Audio level meter

To be extended: AU-162 Board

Preparation:

- AUDIO IN: CH-1 400 Hz, +4 dBu
- AUDIO INPUT SELECT:
  - PCM1 CH-1/CAM→CH-1
- AUDIO SELECT:
  - PCM1 AUTO/MAN→AUTO
- EE mode

Test point: TP1(GND: E1)/AU-162 Board

Adjusting point: ⌚RV1/AU-162 Board

Specification:  $-18.0 \pm 0.2$  dBu

### 7-3-9. PCM2 EE LEVEL ADJUSTMENT

Equipment: Audio level meter

To be extended: AU-162 Board

Preparation:

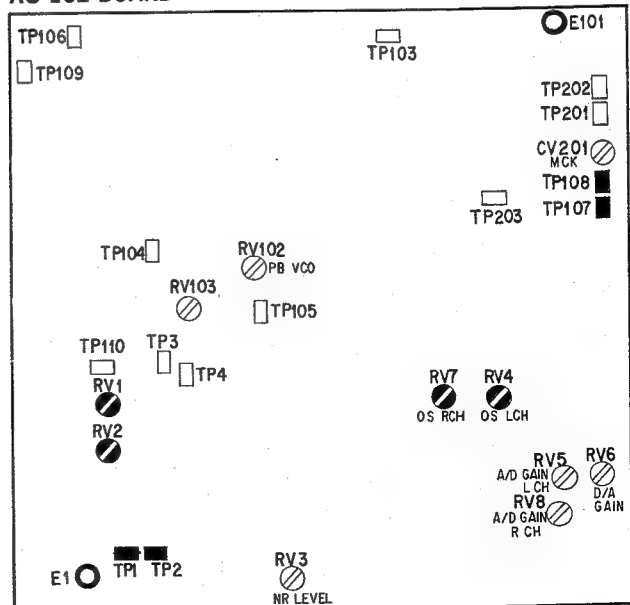
- AUDIO IN: CH-2 400 Hz, +4 dBu
- AUDIO SELECT:
  - PCM2 AUTO/MAN→AUTO
- EE mode

Test point: TP2(GND: E1)/AU-162 Board

Adjusting point: ⌚RV2/AU-162 Board

Specification:  $-18.0 \pm 0.2$  dBu

### AU-162 BOARD



### 7-3-10. PCM1 REC LEVEL ADJUSTMENT

Equipment: Audio level meter

To be extended: AU-162 Board

**Preparation :**

- AUDIO IN: CH-1 400 Hz, +4 dBu
- AUDIO INPUT SELECT:  
PCM1 CH1/CAM→CH-1
- AUDIO SELECT:  
PCM1 AUTO/MAN→AUTO
- Adjust as follows while performing the self-recording/play back with a E6-60ME tape.

Test point: TP1(GND : E1)/AU-162 Board

Adjusting point:  RV5/AU-162 Board

Specification:  $-14.0 \pm 0.5$  dBu

### 7-3-11. PCM2 REC LEVEL ADJUSTMENT

Equipment: Audio level meter

To be extended: AU-162 Board

**Preparation :**

- AUDIO IN: CH-2 400 Hz, +4 dBu
- AUDIO SELECT:  
PCM2 AUTO/MAN→AUTO
- Adjust as follows while performing the self-recording/play back with a E6-60ME tape.

Test point: TP2(GND : E1)/AU-162 Board

Adjusting point:  RV8/AU-162 Board

Specification:  $-14.0 \pm 0.5$  dBu

### 7-3-12. LINE AU-1 MONITOR OUT LEVEL ADJUSTMENT

Equipment: Audio level meter

To be extended: FP-40 Board

**Preparation:**

- AUDIO IN: CH-1 400 Hz, +4 dBu
- AUDIO INPUT SELECT:  
PCM1 CH-1/CAM→CH-1
- AUDIO SELECT:  
PCM1 AUTO/MAN→AUTO
- MONITOR SELECT:  
AFM/PCM→PCM  
PCM1/ST • MIX/PCM2→ST • MIX
- EE mode

Test point: AUDIO OUT-L connector(terminated with 47k $\Omega$ )

Adjusting point: ① RV308/FP-40 Board

Specification:  $-10.0 \pm 0.2$  dBu

### 7-3-13. LINE AU-2 MONITOR OUT LEVEL ADJUSTMENT

**Equipment:** Audio level meter

To be extended: FP-40 Board

**Preparation:**

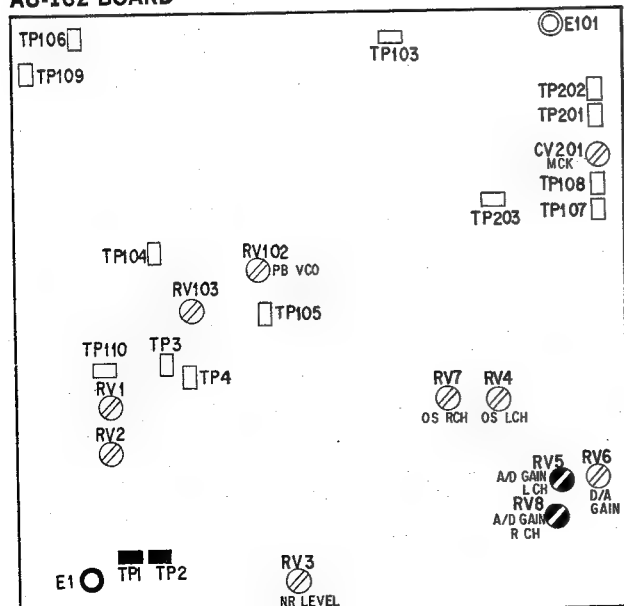
- AUDIO IN: CH-2 400 Hz, +4 dBu
- AUDIO SELECT:  
PCM2 AUTO/MAN→AUTO
- MONITOR SELECT:  
AFM/PCM→PCM  
PCM1/ST • MIX/PCM2→ST • MIX
- EE mode

Test point: AUDIO OUT-R connector(terminated with 47kΩ)

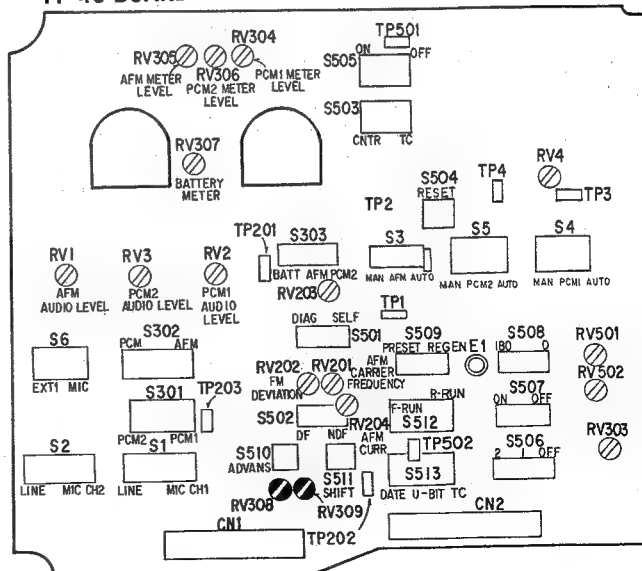
Adjusting point: ⑦ RV309/FP-40 Board

Specification:  $-10.0 \pm 0.2$  dBu

## AU-162 BOARD



## FP-40 BOARD



### 7-3-14. PCM1 METER ADJUSTMENT

Equipment: PCM1 level meter

To be extended: FP-40 Board

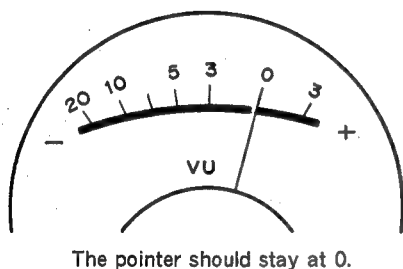
Preparation:

- AUDIO IN: CH-1 400 Hz, +4 dBu
- AUDIO INPUT SELECT:  
PCM1 CH-1/CAM→CH-1
- AUDIO SELECT:  
PCM1 AUTO/MAN→AUTO
- EE mode

Adjusting point: ●RV304/FP-40 Board

Specification: The pointer should stay at 0.

PCM1 level meter



### 7-3-16. AFM METER ADJUSTMENT

Equipment: PCM2/AFM/BATT level meter

To be extended: FP-40 Board

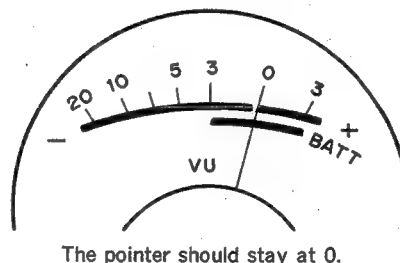
Preparation:

- AUDIO IN: CH-1 400 Hz, +4 dBu
- AUDIO INPUT SELECT:  
PCM1 CH-1/CAM→CAM
- AUDIO SELECT:  
AFM AUTO/MAN→AUTO
- METER SELECT:  
PCM2/AFM/BATT→AFM
- EE mode

Adjusting point: ●RV305/FP-40 Board

Specification: The pointer should stay at 0.

PCM2/AFM/BATT level meter



### 7-3-15. PCM2 METER ADJUSTMENT

Equipment: PCM2/AFM/BATT level meter

To be extended: FP-40 Board

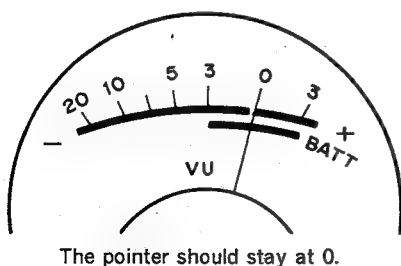
Preparation:

- AUDIO IN: CH-2 400 Hz, +4 dBu
- AUDIO SELECT:  
PCM2 AUTO/MAN→AUTO
- METER SELECT:  
PCM2/AFM/BATT→PCM2
- EE mode

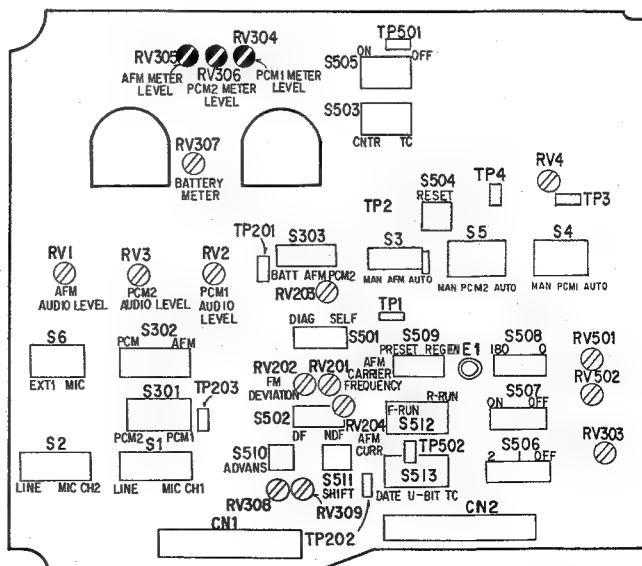
Adjusting point: ●RV306/FP-40 Board

Specification: The pointer should stay at 0.

PCM2/AFM/BATT level meter



### FP-40 BOARD



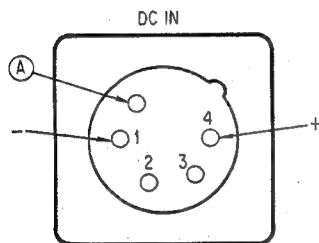
### 7-3-17. BATTERY METER ADJUSTMENT

Equipment: PCM2/AFM/BATT level meter

To be extended: FP-40 Board

Preparation:

1. POWER switch: OFF
2. METER SELECT switch (side panel)→"BATT"
3. Connect the DC IN connector/rear panel and the variable voltage power supply.



To supply power without using the XLR plug, set the MICRO switch ① on the DC IN connector to ON. If the switch is OFF, power is not supplied to the EVW-300 unit.

4. POWER switch: ON

Adjustment Procedure

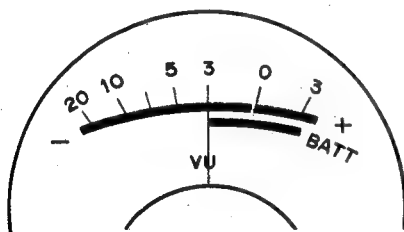
1. Turn the VARIABLE control on the variable voltage power supply slowly until the WARNING lamp/rear panel just starts to be light up.

2. Test point: PCM2/AFM/BATT level meter

Adjusting point: ①RV307/FP-40 Board

Specification: Adjust the ①RV307 so that the pointer stays on the left side of the green belt. (within a pointer width)

PCM2/AFM/BATT level meter



Adjust the RV307 so that the pointer stays on the left side of the green belt. (within a pointer width)

### 7-3-18. AUDIO AFM CARRIER FREQUENCY ADJUSTMENT

Equipment: Frequency counter

To be extended: FP-40 Board

Preparation:

- AUDIO IN: No signal
- AUDIO INPUT SELECT:  
PCM1 CH-1/CAM→CAM
- AUDIO SELECT:  
AFM AUTO/MAN→AUTO
- EE mode

Test point: TP203 (GND: E1)/FP-40 Board

Adjusting point: ①RV201/FP-40 Board

Specification:  $1.5 \pm 0.002$  MHz

### 7-3-19. AFM DEVIATION ADJUSTMENT

Equipment: Audio level meter

To be extended: FP-40 Board

Preparation:

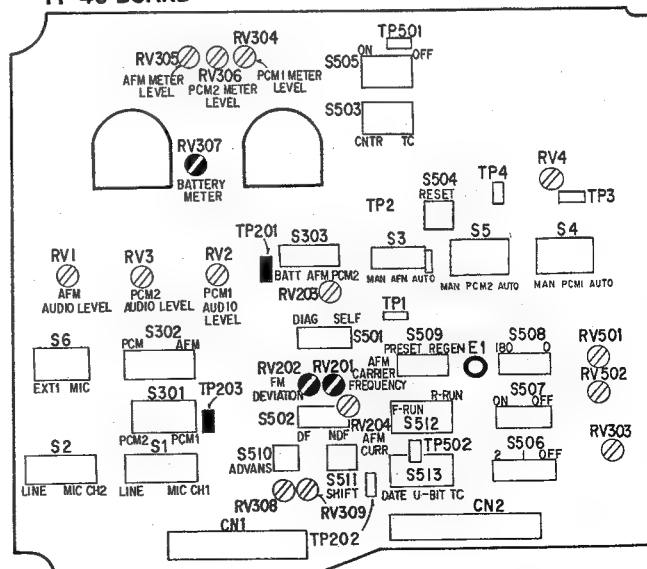
- Play back the Audio 400 Hz portion of the alignment tape WR5-5NSP.

Test point: TP201 (GND: E1)/FP-40 Board

Adjusting point: ①RV202/FP-40 Board

Specification:  $-10.0 \pm 0.2$  dBu

FP-40 BOARD



### 7-3-20. PCM REC CURRENT ADJUSTMENT

Equipment: Oscilloscope

To be extended: AU-162 Board

Preparation:

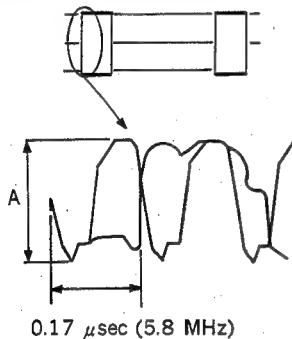
- Insert a E6-60ME tape.
- REC mode

Test point: TP101/SBX-1508 Board

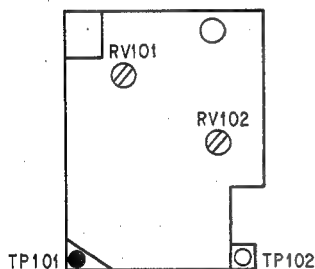
Trigger: TP110/AU-162 Board

Adjusting point: RV103/AU-162 Board

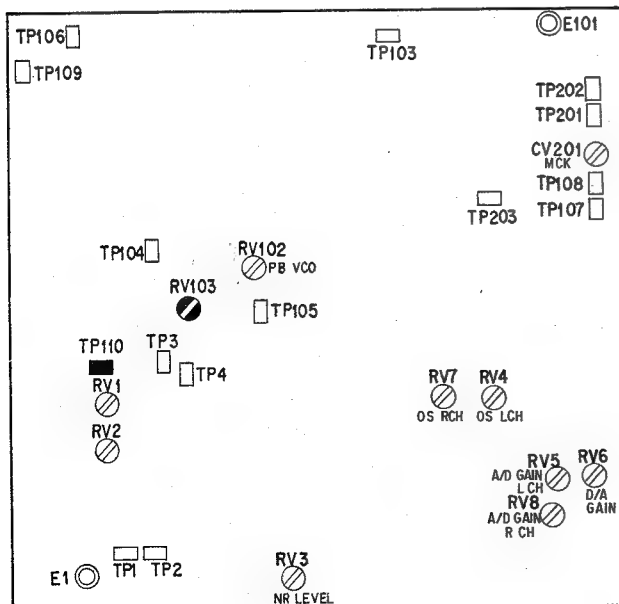
Specification:  $A=175 \pm 10$  mVp-p



SBX-1508 BOARD



AU-162 BOARD



### 7-4. VIDEO SYSTEM ADJUSTMENT

Preparation:

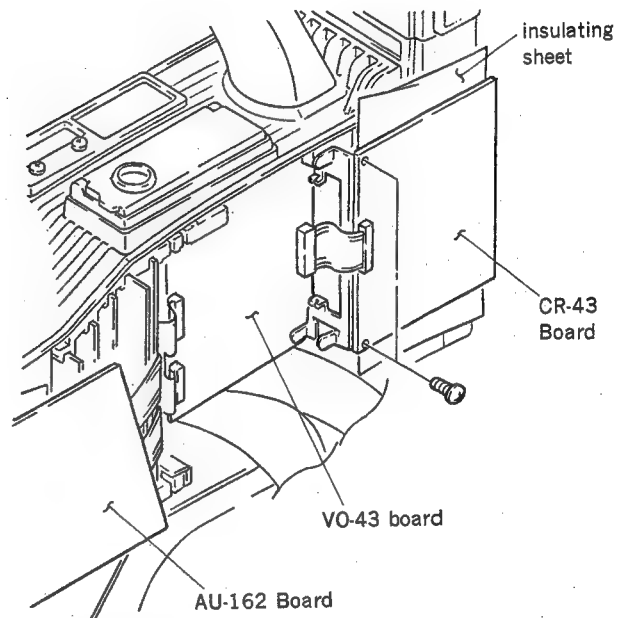
- S1 (75%/100%)/IE-33 board→100%

**Note :** After the adjustment, return S1/IE-33 board to 75%.

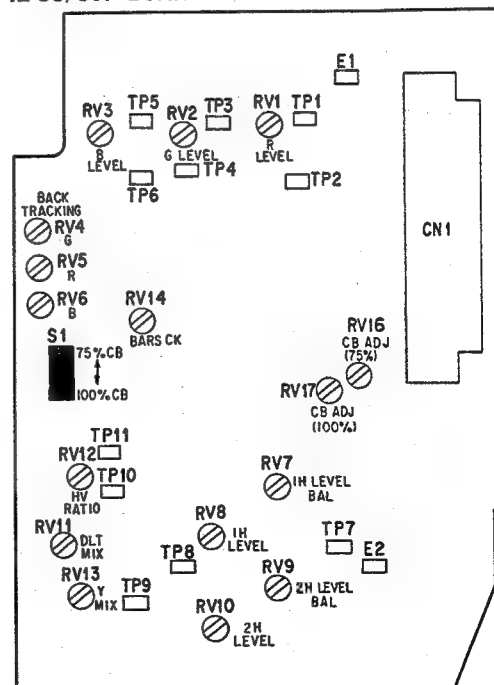
- Open AU-162 board and remove four screws securing CR-43 board.

Turn the component side of CR-43 board toward you and fix with two screws as illustrated.

Be sure to put an insulating sheet between the CR-43 board and the unit.



IE-33/33P BOARD





### 7-4-1. PB RF FREQUENCY ADJUSTMENT

Equipment : Oscilloscope

**Preparation :**

1. Connect the connector CN1 on the tracking adjustment fixture and the connector CN24 on the MB-384 Board.

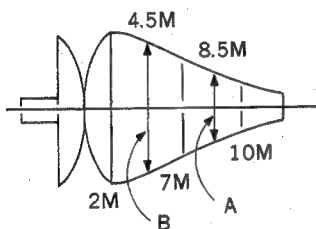
2. Play back the alignment tape WR5-7NE.

Test point: TP4(GND: TPE1)/Tracking adjustment fixture

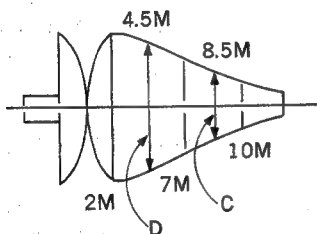
Trigger: TP3/Tracking adjustment fixture

### Adjustment Procedure

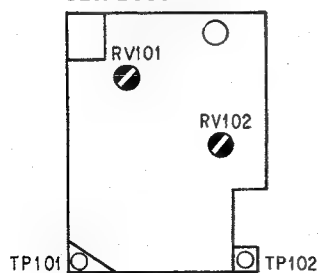
1. TRIG mode/Oscilloscope→ - side
2. Adjusting point: ●RV102/SBX-1508 Board  
Specification:  $A(8.5\text{MHz})=B(4.5\text{MHz})\times 67\%$



4. Adjusting point: RV101/SBX-1508 Board  
Specification:  $C(8.5\text{MHz}) = D(4.5\text{MHz}) \times 67\%$



**Note:** After the adjustment, remove the connector CN1 on the tracking adjustment fixture.

**SBX-1508 BOARD**

### 7-4-2. REC Y LEVEL ADJUSTMENT

**Equipment:** Oscilloscope

To be extended: VO-43 Board

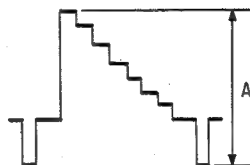
**Preparation :**

- OUTPUT switch/Camera side panel → BARS
- EE mode

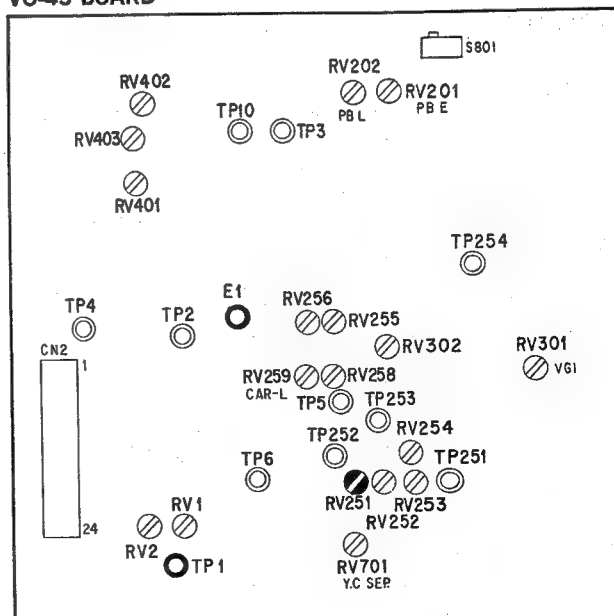
Test point: TP1(GND: E1)/VO-43 Board

Adjusting point: ①RV251/V0-43 Board

Specification:  $A = 0.5 \pm 0.05$  Vp-p



**VO-43 BOARD**



### 7-4-3. Y/C SEP ADJUSTMENT

Equipment: Oscilloscope

To be extended: VO-43 Board

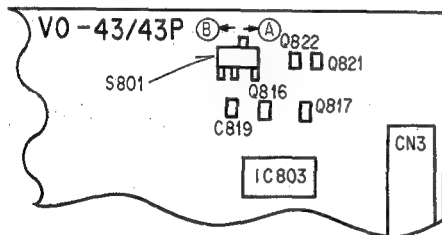
Preparation:

1. OUTPUT switch/Camera side panel→BARS
2. Switch setting of the side panel
  - ①SELF DIAG switch→ON
  - ②REGEN/PRESET switch→PRESET
  - ③R-RUN/SET/F-RUN switch→SET
  - ④ADVANCE/SHIFT button→Set the Menu Number to 104.
  - ⑤R-RUN/SET/F-RUN switch→R-RUN
  - ⑥ADVANCE/SHIFT button→Set to 2.
  - ⑦Put the RESET button.

104 2

RF SERVO HUMID SLACK TAPE BATT  
END

3. S801/VO-43 Board→Ⓐ side



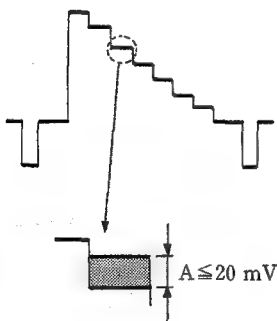
4. S1(VTR-TEST)/ES-4 Board→Under side

5. EE mode

Test point: TP254(GND: E1)/VO-43 Board

Adjusting point: ⚙RV252, ⚙RV701/VO-43 Board

Specification: Level "A"=Minimum ( $\leq 20$  mV)



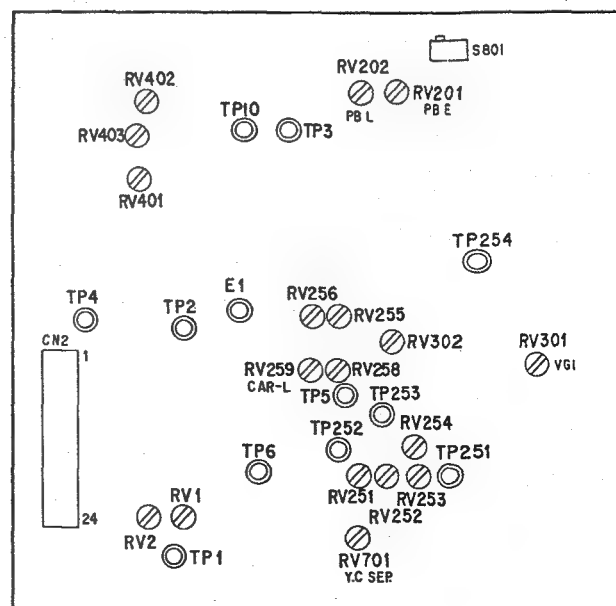
**Note:** After the adjustment, set switches as follows.

S801/VO-43 Board→Ⓑ side

S1(VTR-TEST)/ES-4 Board→Upper side

SELF DIAG switch(side panel)→OFF

### VO-43 BOARD



#### 7-4-4. IR ADJUSTMENT

Equipment: Oscilloscope

To be extended: VO-43 Board

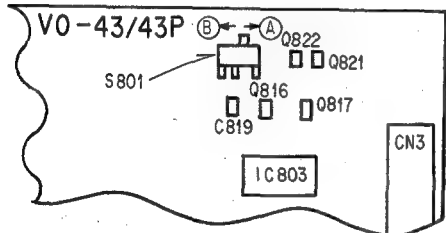
Preparation:

1. POWER switch→OFF
2. R848 (A SIDE; zone A-3)/VO-43 Board→Delete
3. Connect the CL692(B SIDE; zone C-3)/VO-43 Board to +5V line (A of L701) with the resistor 3.9kΩ.
4. POWER switch→ON
5. OUTPUT switch/Camera side panel→BARS
6. Switch setting of the side panel
  - ①SELF DIAG switch→ON
  - ②REGEN/PRESET switch→PRESET
  - ③R-RUN/SET/F-RUN switch→SET
  - ④ADVANCE/SHIFT button→Set the Menu Number to 104.
  - ⑤R-RUN/SET/F-RUN switch→R-RUN
  - ⑥ADVANCE/SHIFT button→Set to 2.
  - ⑦Put the RESET button.

104 2

RF SERVO HUMID SLACK TAPE BATT  
END

7. S801/VO-43 Board→A side



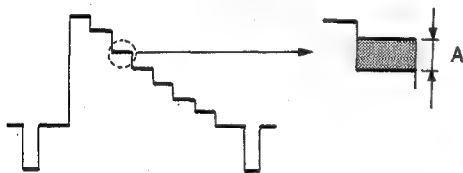
8. S1(VTR-TEST)/ES-4 Board→Under side

9. EE mode

Test point: TP252(GND: E1)/VO-43 Board

Adjusting point: RV254/VO-43 Board

Specification: Level "A"→Minimum



**Note:** After the adjustment, set switches as follows.

POWER switch→OFF

S801/VO-43 Board→B side

S1(VTR-TEST)/ES-4 Board→Upper side

R848/VO-43 Board→Return to normal position.

CL692(soldering side)/VO-43 Board→Return to normal position.

SELF DIAG switch(side panel)→OFF

#### 7-4-5. EMPHASIS LEVEL ADJUSTMENT

Equipment: Oscilloscope

To be extended: VO-43 Board

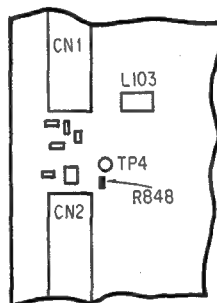
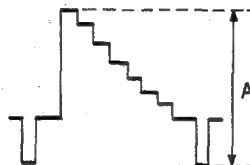
Preparation:

- OUTPUT switch/Camera side panel→BARS
- EE mode

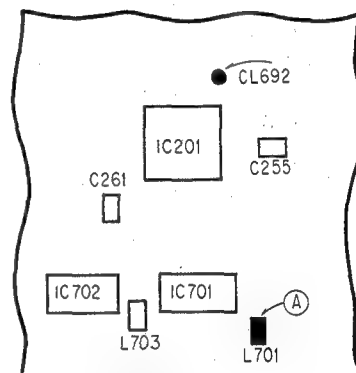
Test point: TP253(GND: E1)/VO-43 Board

Adjusting point: RV301/VO-43 Board

Specification: A=0.45±0.05 Vp-p

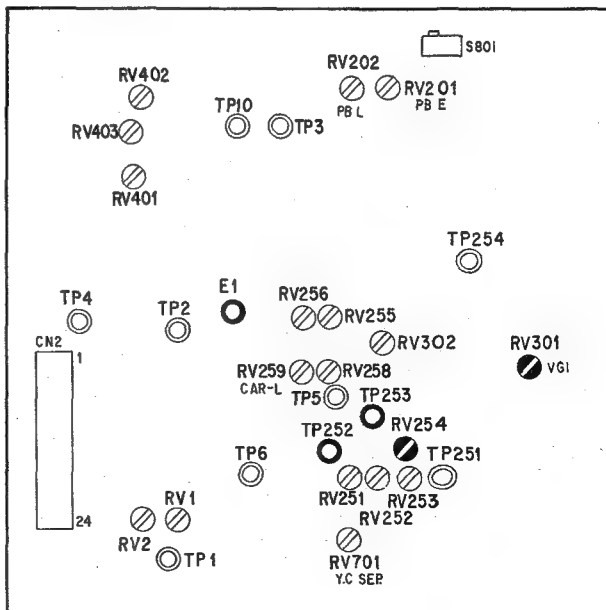


VO-43 A-SIDE



VO-43 B-SIDE

#### VO-43 BOARD



#### 7-4-6. CHROMA EMPHASIS ADJUSTMENT

Equipment: Oscilloscope

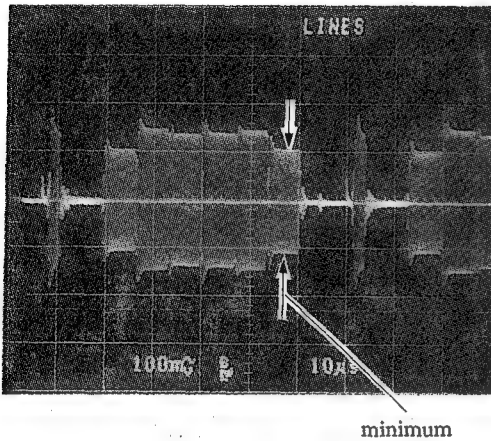
To be extended: CR-43 Board

Preparation:

• OUTPUT switch/Camera side panel→BARS

Test point: TP601 (GND: E101)/CR-43 board

Adjusting point: ●FL602/CR-43 Board



#### 7-4-7. Hi8 MODE PB Y LEVEL ADJUSTMENT

Equipment: Oscilloscope

To be extended: VO-43 Board

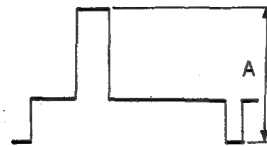
Preparation:

• Play back the color-bar signal portion of the alignment tape WR5-8NSE.

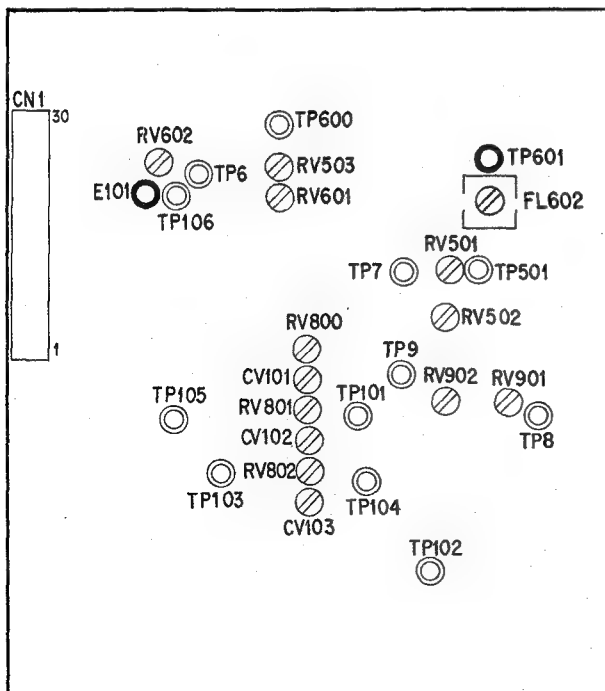
Test point: TP251(GND: E1)/VO-43 Board

Adjusting point: ●RV201/VO-43 Board

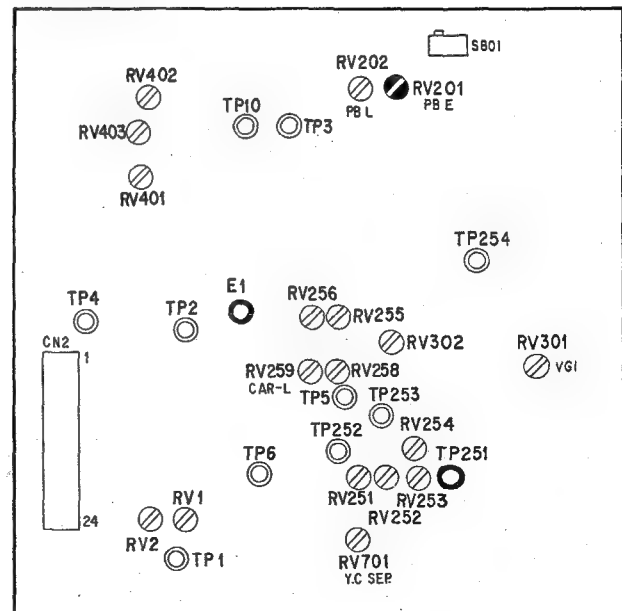
Specification:  $A=0.5 \pm 0.05$  Vp-p



#### CR-43 BOARD



#### VO-43 BOARD



#### 7-4-8. STD MODE PB Y LEVEL ADJUSTMENT

Equipment: Oscilloscope

To be extended: VO-43 Board

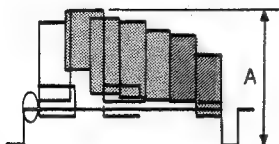
Preparation:

- Play back the color-bar signal portion of the alignment tape WR5-8NSE.

Test point: TP251(GND: E1)/VO-43 Board

Adjusting point: ●RV202/VO-43 Board

Specification:  $A=0.5\pm0.05$  Vp-p



#### 7-4-10. EE LINE OUT LEVEL ADJUSTMENT

Equipment: Oscilloscope

To be extended: VO-43 Board

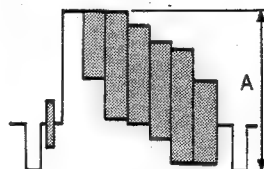
Preparation:

- OUTPUT switch/Camera side panel→BARS
- EE mode

Test point: VIDEO OUT

Adjusting point: ●RV1/VO-43 Board

Specification:  $A=1.0\pm0.05$  Vp-p (terminated with 75Ω)



#### 7-4-9. PB Y LEVEL ADJUSTMENT

Equipment: Oscilloscope

To be extended: VO-43 Board

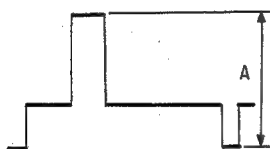
Preparation:

- Play back the color-bar signal portion of the alignment tape WR5-8NSE.

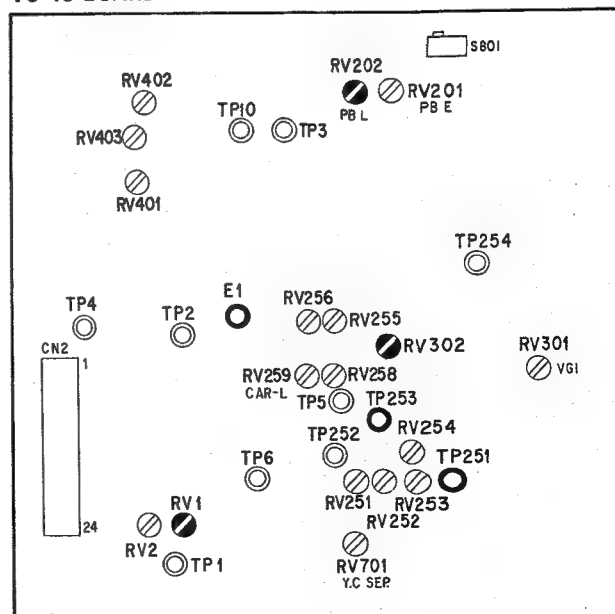
Test point: TP253(GND: E1)/VO-43 Board

Adjusting point: ●RV302/VO-43 Board

Specification:  $A=0.52\pm0.05$  Vp-p



#### VO-43 BOARD



#### 7-4-11. PB LINE OUT LEVEL ADJUSTMENT

Equipment: Oscilloscope

To be extended: VO-43 Board

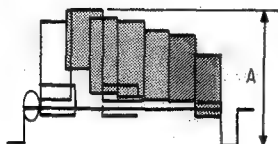
Preparation:

- Play back the color-bar signal portion of the alignment tape WR5-8NSE.

Test point: VIDEO OUT

Adjusting point: ●RV2/VO-43 Board

Specification:  $A=1.05 \pm 0.05$  Vp-p (terminated with  $75\Omega$ )



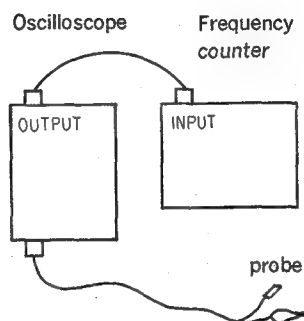
#### 7-4-12. LOW BAND MODE Y FM CARRIER ADJUSTMENT

Equipment: Oscilloscope, Frequency counter

To be extended: VO-43 Board

Preparation:

- Connect the oscilloscope and frequency counter as follows.

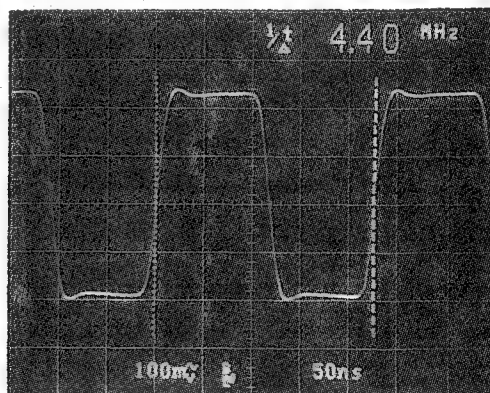


- SELF DIAG switch/side panel→ON
- Insert a P6-60MP tape.
- EE mode

Test point: TP10(GND: E1)/VO-43 Board

Adjusting point: ●RV259/VO-43 Board

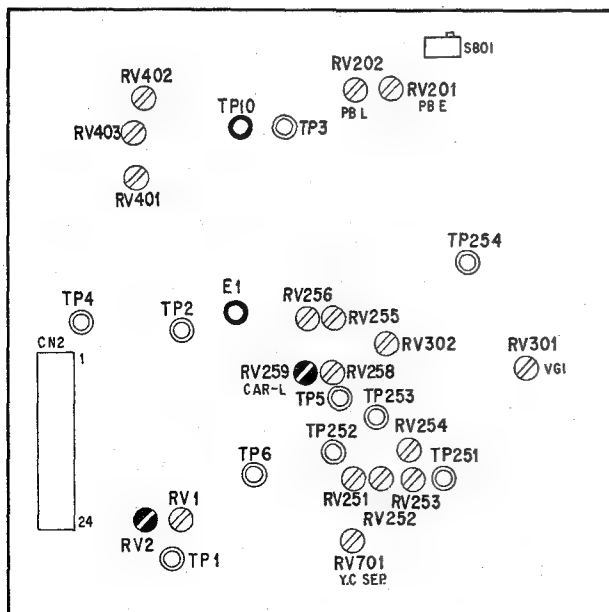
Specification:  $4.40 \pm 0.02$  MHz



**Note:** After the adjustment, set the switches as follows.

- ①SELF DIAG switch/side panel→OFF
- ②POWER switch/side panel→OFF

#### VO-43 BOARD



#### 7-4-13. LOW BAND MODE Y FM DEVIATION ADJUSTMENT

Equipment: Oscilloscope

To be extended: VO-43 Board

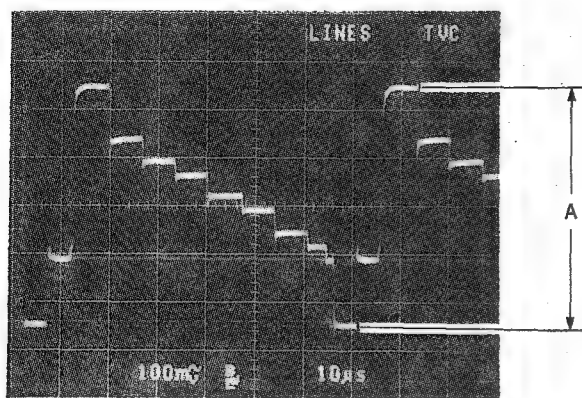
Preparation:

- Adjust as follows while performing the self-recording/play back with a P6-60MP tape.

Test point: TP253(GND: E1)/VO-43 Board

Adjusting point: RV258/VO-43 Board

Specification:  $A=0.5\pm0.025$  V



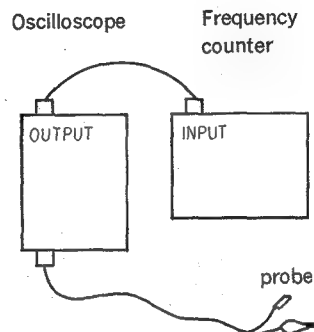
#### 7-4-14. Hi8 MODE Y FM CARRIER ADJUSTMENT

Equipment: Oscilloscope, Frequency counter

To be extended: VO-43 Board

Preparation:

- Connect the oscilloscope and frequency counter as follows.



- SELF DIAG switch/side panel→ON
- Insert a E6-60ME tape.
- EE mode

Test point: TP10(GND: E1)/VO-43 Board

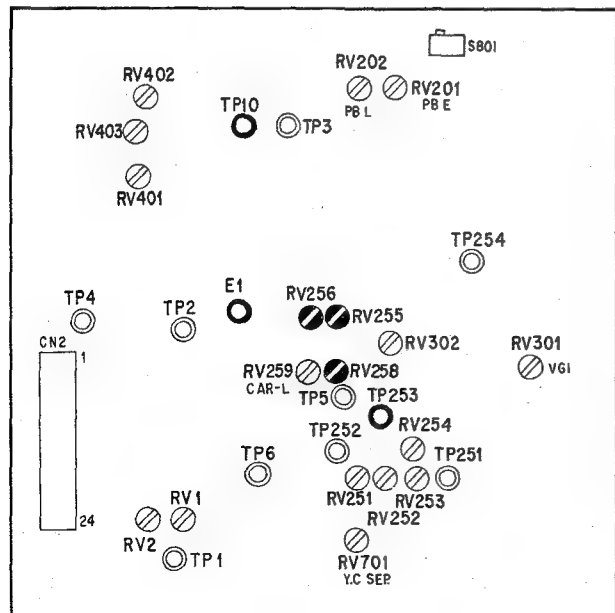
Adjusting point: RV256/VO-43 Board

Specification:  $6.00\pm0.02$  MHz

**Note:** After the adjustment, set the switches as follows.

- ①SELF DIAG switch/side panel→OFF
- ②POWER switch/side panel→OFF

#### VO-43 BOARD



#### 7-4-15. Hi8 MODE Y FM DEVIATION ADJUSTMENT

Equipment: Oscilloscope

To be extended: VO-43 Board

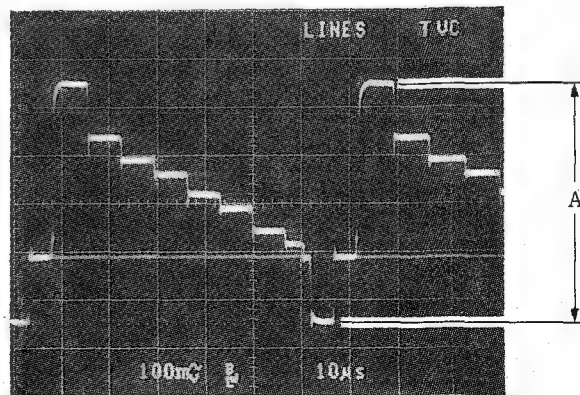
Preparation:

- Perform the self-recording/play back with a E6-60ME tape.

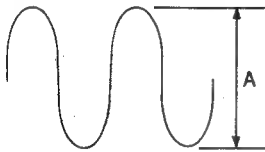
Test point: TP253(GND: E1)/VO-43 Board

Adjusting point: RV255/VO-43 Board

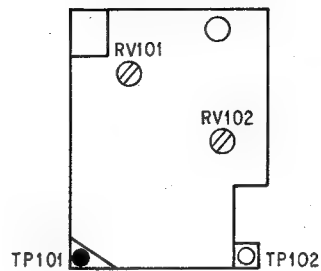
Specification:  $A=0.5\pm0.025$  V



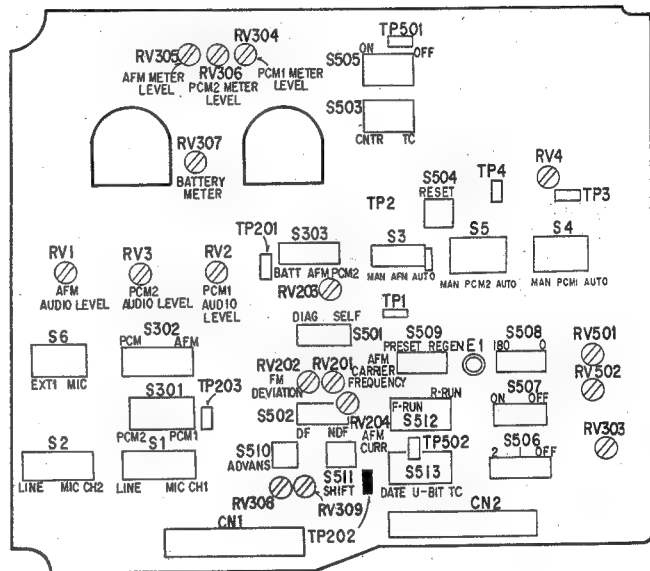
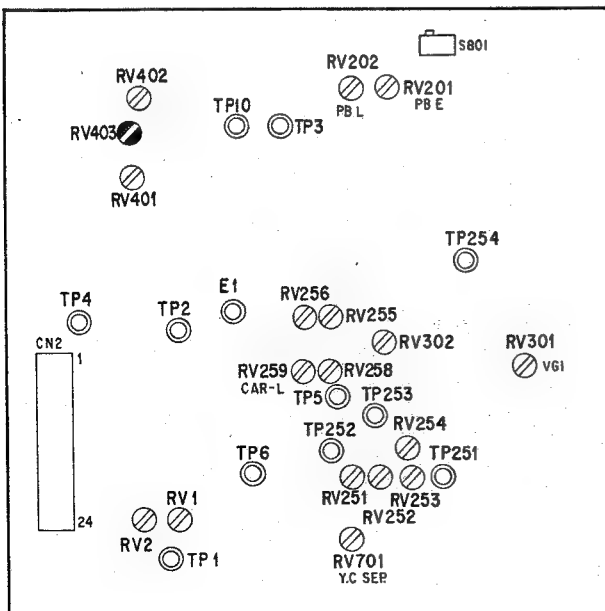
Test point: TP101/SBX-1508 Board  
Adjusting point: ①RV403/VO-43 Board  
Specification:  $A=160\pm10\text{mA}$



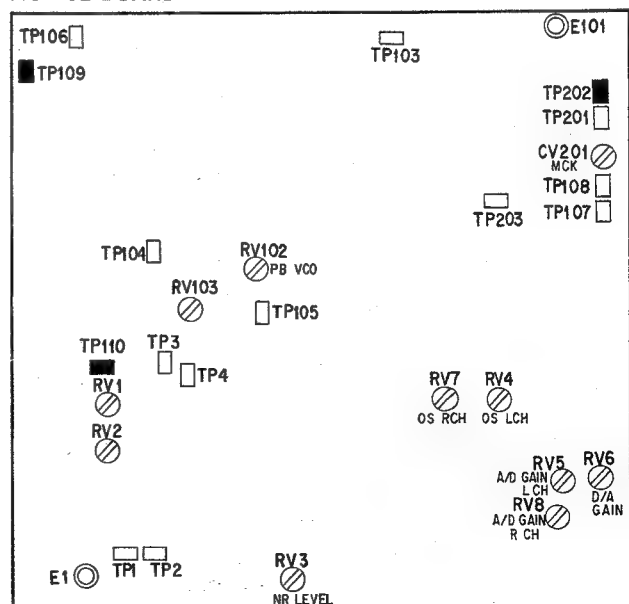
**Note :** After the adjustment, remove a shorting clip.

**SBX-1508 BOARD**

## FP-40 BOARD

**VO-43 BOARD**

## AU-162 BOARD





## 7-4-17. REC CHROMA REC CURRENT ADJUSTMENT

Equipment: Oscilloscope

To be extended: VO-43 Board

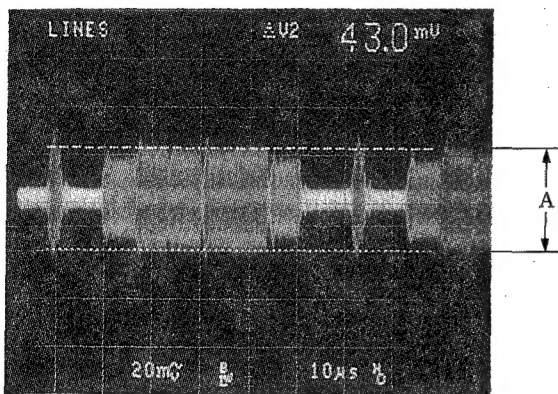
Preparation:

1. POWER switch/side panel→OFF
2. C425, C426, C429/VO-43→Delete
3. POWER switch/side panel→ON
4. Insert a E6-60ME tape.
5. REC mode

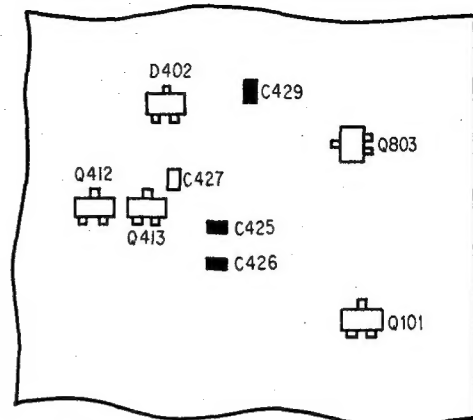
Test point: TP101/SBX-1508 Board

Adjusting point: RV402/VO-43 Board

Specification: Chroma level  $A=43\pm 2$  mV

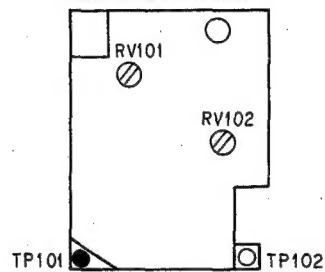


**Note :** After the adjustment, return C425, C426 and C429/VO-43 to normal position.

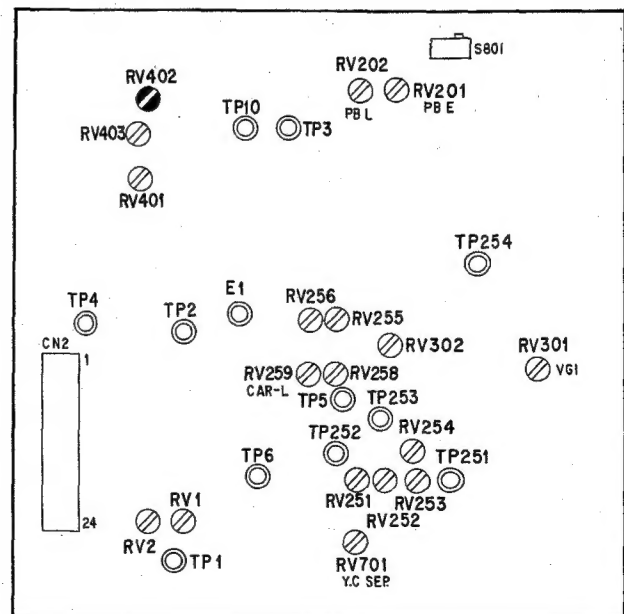


VO-43 B-SIDE

SBX-1508 BOARD

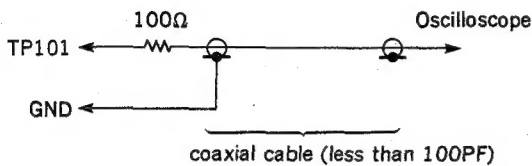


VO-43 BOARD



#### 7-4-18. REC AFM REC CURRENT ADJUSTMENT

**Note :** Do not use the probe of 10: 1 in this adjustment because the signal level of TP101 is low. Connect directly oscilloscope through 100 ohms resistor as shown in the figure.



Equipment: Oscilloscope

To be extended: VO-43 Board

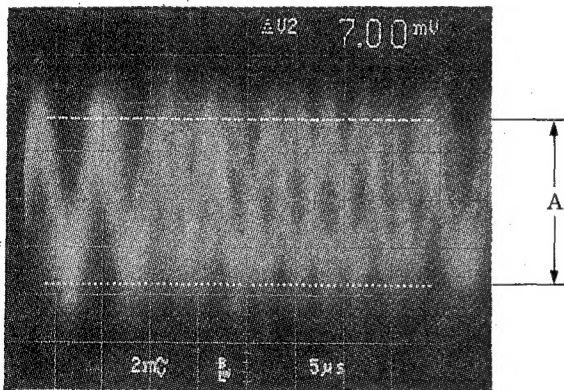
Preparation:

1. POWER switch/side panel→OFF
2. C426, C427, C429/VO-43→Delete
3. POWER switch/side panel→ON
4. Insert a E6-60ME tape.
5. REC mode

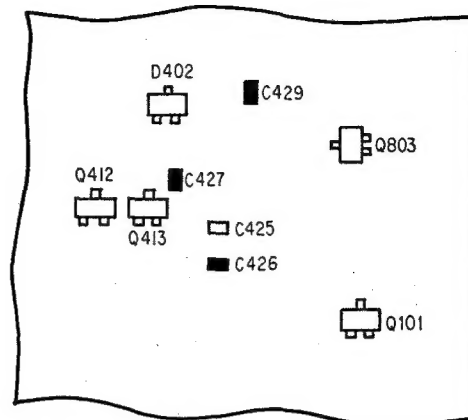
Test point: TP101/SBX-1508 Board

Adjusting point: RV401/VO-43 Board

Specification: AFM level A=7±1 mV

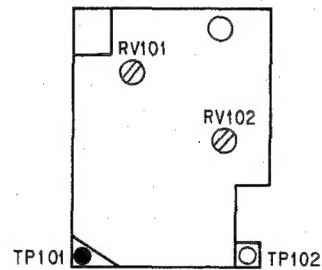


**Note :** After the adjustment, return C426, C427 and C429/VO-43 to normal position.

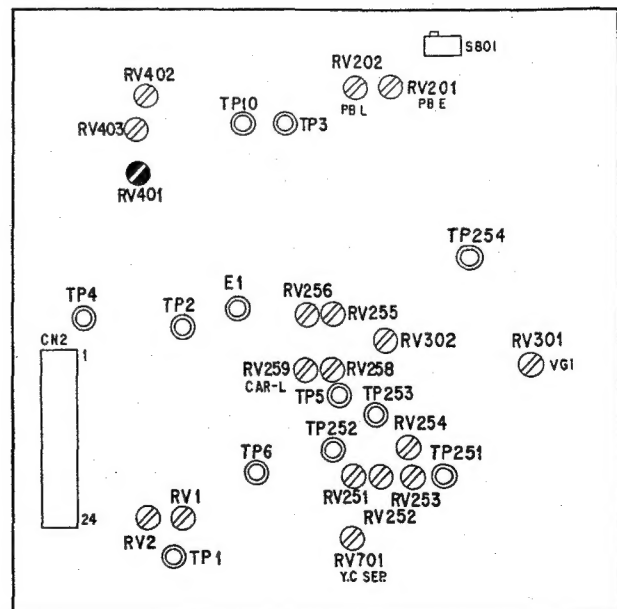


VO-43 B-SIDE

SBX-1508 BOARD



CR-43 BOARD



#### 7-4-19. CHROMA CANCEL BALANCE ADJUSTMENT

Equipment : Oscilloscope

To be extended : CR-43 Board

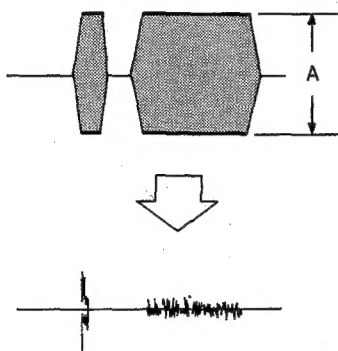
Preparation :

- OUTPUT switch/Camera side panel→BARS
- REC mode

Test point : TP8(GND : E101)/CR-43 Board

Adjusting point : ●RV901/CR-43 Board

Specification : Level "A"→Minimum



#### 7-4-20. C CORRELATION PHASE ADJUSTMENT 1

Equipment : Oscilloscope

To be extended : CR-43 Board

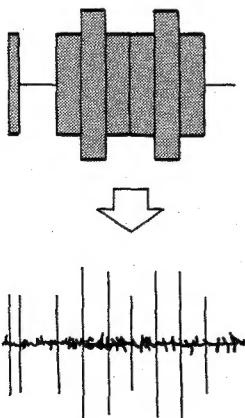
Preparation :

- OUTPUT switch/Camera side panel→BARS
- Connect between these points on the CR-43 Board with shorting clips. TP106/CR-43→E101/CR-43
- EE mode

Test point : TP101(GND : E101)/CR-43 Board

Adjusting point : ●RV801, ●CV102/CR-43 Board

Specification : Chroma level→Minimum



**Note :** After the adjustment, remove a shorting clip.

#### 7-4-21. C CORRELATION PHASE ADJUSTMENT 2

Equipment : Oscilloscope

To be extended : CR-43 Board

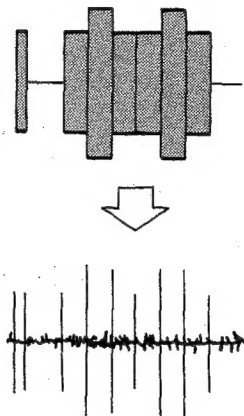
Preparation :

- OUTPUT switch/Camera side panel→BARS
- Connect between these points on the CR-43 Board with shorting clips. TP106/CR-43→E101/CR-43
- EE mode

Test point : TP102(GND : E101)/CR-43 Board

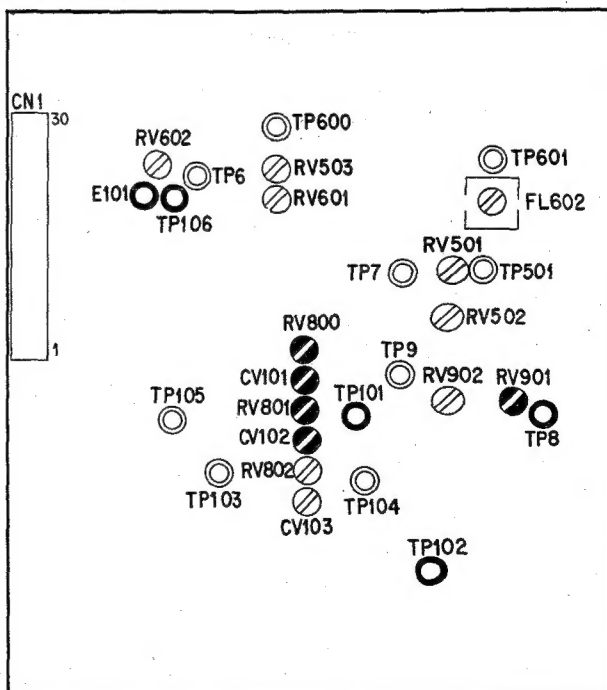
Adjusting point : ●RV800, ●CV101/CR-43 Board

Specification : Chroma level→Minimum



**Note :** After the adjustment, remove a shorting clip.

#### CR-43 BOARD



#### 7-4-22. C CORRELATION PHASE ADJUSTMENT 3

Equipment: Oscilloscope

To be extended: CR-43 Board

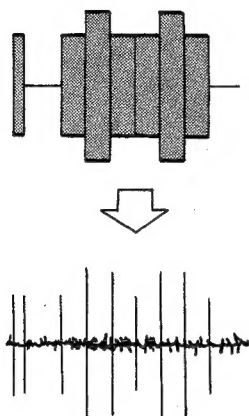
Preparation:

- OUTPUT switch/Camera side panel→BARS
- Connect between these points on the CR-43 Board with shorting clips. TP106/CR-43→E101/CR-43
- EE mode

Test point: TP105(GND: E101)/CR-43 Board

Adjusting point: ●RV802, ●CV103/CR-43 Board

Specification: Chroma level→Minimum



**Note :** After the adjustment, remove a shorting clip.

#### 7-4-23. EE VIDEO OUT CHROMA LEVEL ADJUSTMENT

Equipment: Vectorscope

To be extended: CR-43 Board

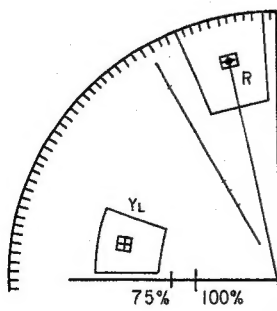
Preparation:

- OUTPUT switch/Camera side panel→BARS
- EE mode

Test point: VIDEO OUT/EVW-300 rear panel

Adjustment Procedure

- Adjust ●RV902/CR-43 Board so that the red beam spot is located in the "田" mark on the vectorscope.



#### 7-4-24. PB CHROMA LEVEL ADJUSTMENT

Equipment: Vectorscope

To be extended: VO-43 Board

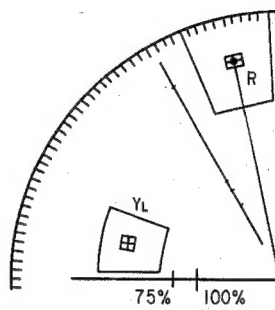
Preparation:

- Play back the color-bar signal portion of the alignment tape WR5-8NSE.

Test point: VIDEO OUT

Adjustment Procedure

- Adjust ●RV601/CR-43 Board so that the red beam spot is located in the "田" mark on the vectorscope.



#### CR-43 BOARD

